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by Worldfree

White Paper

Challenging the Blockchain Paradigm

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WhitePaper

Abstract

Worldfree's primary aim is to build an international *free market*, where the FreeMark provides a more stable digicurrency to reduce exchange risks between international buyers and sellers trading goods, services and financial assets.

Software in our times itself provides a regulatory framework: by establishing a unique channel where buyers and sellers can sell directly between themselves, without an intermediary, under rules enforced by a system that dictates on rules agreed to in advance by the participants, and on prices set by larger markets assets that are owned by the network and sold into it, the FreeMark reduces over-regulation of the marketplace. Government regulators may not like this because it puts them out of a job, while providing a better, less costly and more efficient place to buy and sell goods.

The FreeMark app is the basis of a micropayment-based network, as digicurrency more stable even than government currencies. The FreeMark price is automatically pegged to a basket of 20 commodities, giving it a rational valuation set by very large markets. Since most goods are comprised of the raw materials bought and sold on the commodities market, connecting the price of the FreeMark to these commodities prices provides inflation and deflation resistance, to protect the purchasing power of owner's wealth. Commodity prices serve as a proxy for inflation.

Worldfree has a twenty-year history as a software company, having already developed and sold commercial AI software systems to many G200 companies, using a proprietary technology called *Natural Language Reasoning* (NLR). NLR allows access to the FreeMark marketplace through natural language (normally-spoken language, initially English). Worldfree developed the world's first technology to deliver direct answers from live, unstructured text, and the company was subject to an acquisition offer by a G100 tech firm.

There are some significant problems with blockchain technology that undermine its effectiveness as a basis for world commerce. Aside from being poorly scalable, **the consensus paradigm is both non-democratic and non-liberty-based**. To understand why this is so, it helps to understand the difference between a republic, a libertocracy and a democracy.

A *republic*, or consensus-based authority, is a system of governing people or transactions that uses voting. Voting always results in fractionation—the forming of groups of people who support the same selection—a person or a policy. With either people or policies, it is the interests of the parties supporting an option that generally determine their behaviour. Rather than reaching a selection made upon a functional basis, consensus decision-making introducing corruption, which in general means all the decisions exhibit a form of *corruption*, which is contrary to the interests of one group or another, and occurs without their consent.

A *democracy*, as in the type of government that originated in ancient Athens, is distinguished in that officials are chosen by random draw, as explained later in this White Paper. This is called sortition, and it has the advantage that no matter who endorses you, how many or with how much funds, you cannot get elected except by random. That peoples around the world have been told they live in democracies, which they do not, is a crime of misrepresentation. Democracies have disadvantages, such as the lack of merit as a basis for selecting officials, but the advantage that weeds out corruption is important, and is used by the

FreeMark to provide a different and perhaps better technological paradigm than the blockchain, using the *Nodechain* paradigm, invented by Worldfree's founder.

A *libertocracy* is distinguished when there are multiple options for selection. For example, the US allows you to live in the state of your choosing, although its failing is a strong, consensus oligarchy as a central government, reducing the possible alternatives to choose from. In a global libertocracy, there would be lots of countries, with different ethical codes at the basis of their legal codes, which would allow people to easily migrate upon application, acceptance, and agreement to live as a consenting adult under their ethical, legal and established institutions. This standard seems obvious, but it is rarely established in a formal, legal way, which would further legitimize today's governments. Also necessary for a global democracy would be the ease of forming start-up countries, similarly to the ease of forming a start-up business, although the latter is much easier and requires much less capital and experience.

An example or metaphor for the implications of each type of authority helps: suppose three people go into a bar, two order beer, and the third orders wine. In a consensus-based republic, all three get beer, while in a democracy, they each would get a random drink, and finally in a liberty-based framework, they each get what they choose. Free markets provide a liberty-based opportunity if there are many producers of goods and services. It is not a perfect world, because there are only so many who may provide an adequate standard of delivery or performance, but it more effectively serves the needs of all its participants.

As this is not a paper on governance, the details and implications are confined to digital currency design, and the FreeMark in particular, which uses both the sortition randomness of an actual democracy, and the free-markets of a libertocracy. Software provides the basis for this libertocracy, as no one forces you to use the FreeMark, as there are other platforms available, for which liberty advocates should be glad.

Presuming that the best currency would be only one, globally used unit is silly: that would stunt innovation, be unstable, and threaten the lives and economic liberties of all people, as they would have little control over their medium of exchange. Presently, there are many people who are attempting to impose a *currency dictatorship* on the world, without a vote, and this is a worrying state. Even the USSR had a black market that allowed its people to survive, as centralized decision-making cares little for the preferences over those it is imposed upon.

Thus, the FreeMark is a better—more secure, more just, and rational currency paradigm. In addition to having a more distributed authority and a libertocracy introduction into the free market economy of the FreeMark, the novel medium of exchange also has assets *behind* it. This means that there are real assets, valued on their ability to generate net returns, audited and held in a regulated trust, that provide a source of long-term liquidity, appreciation to support the inflationary resistance, and in general an *intrinsic value* to the FreeMark.

The intrinsic value in a currency means that there is some asset that can be readily exchanged by a market-maker for the FreeMark. The idea that people can be removed from the design of a genuinely valuable medium of exchange is ludicrous—all assets have both a state and a price, the former that depends upon age, use and physical changes, and the latter that depends upon free markets to establish valuation from transactions using the asset.

Sadly, cryptocurrencies generally suffer from *economically* poor design. First among uses of currencies is as a medium of exchange. But as a consequence of their success, and early-stage design, today's currencies are massively *deflationary*, and generally unstable. As they rise in price (as if successful equities), their purchasing power likewise increases. This is seemingly good for owners, and encourages holding cryptocurrencies, but not spending them. When a currency

rises in price, it is called deflation, and central bankers fear deflation because it stunts economic activity—the buying and selling of goods and services—which are the backbone of an economy.

The crypto-*economic* world as it is today is thus stifled. Just as modern central bankers make great efforts to avoid deflationary environments because they reduce GDPs, a cryptocurrency must be designed to be a *more* functional alternative than fiat currencies, so that daily use for buying and selling other items is encouraged as a practical alternative currency for normal business needs.

Worldfree's ***FreeMark*** is a new cryptocurrency to be introduced in 2021 that will eventually have 100% backing, automatically pegged by the ***Atomic Central Bank***® to a basket of 20 commodities. It can be immediately converted into most other currencies or used to purchase goods and services on the FreeMark marketplace. Holding it should deliver an increase in ownership on an average balance, correlated to the positive growth of the money supply, assuming more people are choosing the FreeMark as a channel of savings and transactions. Thus it works contrary to normal fiat currencies, where increases in money supply reduce value; with the FreeMark they receive more value when the money supply increases. Bitcoin, for instance, is often touted because it has a fixed supply, but this is the basis of its deflationary and unstable design—it is a novel idea, but like many new ideas is not really a good one. Existing cryptocurrencies designed like Bitcoin are often unstable over short periods, massively inflationary or deflationary, killing the economic activity that they might otherwise be useful for.

Worldfree's ***Nodechain*** technology is different than a blockchain because it does not store transactions system-wide. It operates in a massively parallel architecture, and data file sizes per node are anticipated at less than 1Mb, with a 50X redundancy factor, *irrespective of the network's size*. Transactions on the Nodechain network can be processed predominantly on the participating parties' systems, with an effectively randomly-selected node updating the coin ownership, accessed through a function of a hash pointer. The patent-pending Nodechain still fulfils the design requirements to eliminate double spending, with greater security and better privacy, overcomes the limitations of the consensus paradigm using sortition, and processes transactions in seconds for each participant, again irrespective of network size. It is distributed with redundancy, using extent-based parallel access.

The FreeMark network utilizes a cryptocurrency foundation engineered for prime-time and mass adoption, with a better designed economic and technological foundation.

Contents

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1 Introduction

Digital currencies have begun to excite the world with the possibilities for distributed finance. The opportunity of peer-to-peer transactions that occur directly between people, rather than through a third party, are similar to the transactions we make using cash today and for thousands of years. The concept is to pay this *digital cash* to anyone, anywhere, at any time for anything or service. This is a great idea, but it has some glitches in the original design that limit its mainstream adoption.

Worldfree is addressing these *scalability* problems with a different approach, challenging the blockchain with an innovative, *stable* currency atop a radical new design for a digital currency, called the **Nodechain**, for **No D**ata **Chain**. The Nodechain is re-engineered both technologically and economically to produce a faster, more secure, more private and much more scalable means of peer-to-peer transacting *in seconds* for secure, every-day exchanges between *billions* of people.

The blockchain is an excellent idea—it has been around roughly 12 years, so it is time to open a discussion to consider it from historic, technical, economic and societal perspectives. We want change if it is better: it is wise to take a moment to assess that it is, and that it is the best way to do what it does. There is no need to pay lip service to the hype and success based upon recognition of the potential—it is time to get to the business of making cryptocurrencies work and scale up.

Cryptocurrencies today are *also* predominantly **fiat digital currencies**: that is, there is no basis for assessing their valuation. The FCA, the financial authority of the UK, noted that:

> ***"...retail consumers cannot reliably assess the value and risks of derivatives and exchange traded notes that reference certain cryptoassets... due to the of the underlying assets, which have no inherent value and so differ from other assets that have physical uses, promise future cash flows or are legally accepted as money".***
>
> ***FCA, Policy Statement PS20/10***

Frankly, the Pound Sterling has no basis through which anyone can reliably assess its value, nor does any other fiat currency, although they are legally accepted as money. This latter distinction is the problem for many people—why is legality withheld and yet allowed for a non-value-based paper currency? Fiat digital currencies exist by the command of their backers, rather than a government, which in the end is only a different group of people. This lack of an asset-backing is disturbing: it means they have no fundamental value in themselves and thus are inherently worthless. This is why the patent-pending Nodechain must also consider economic issues.

If we can make digital currencies that have a value, then they will be better than their government counterparts. For what other reason should a fickle world hold digital currencies as a value? If facilitating exchange is their primary use, we must also ask whether they are doing that effectively. If they allow financial privacy, we have to ask whether they really do. If currencies per se fulfil other functions, we should ask what they are, *then* design a cryptocurrency around that functionality.

One of the motivating ideas behind the most famous cryptocurrency, Bitcoin, is that it cannot be inflated into lower and lower value as governments do with their unbacked money. But it instead suffers from the opposite problem—it is highly deflationary, which is also a poison to economic activity.

Both inflation and deflation stunt economic activity, so to rise to the potential of the cryptocurrency challenge we must find a method of halting both. In order to engineer a currency, we must understand its function and primary role, and then its technical design can proceed rationally. A digital currency should promote economic activity rather than discourage it, provide backing so that each unit of currency had an inherent value in itself, and should be scalable so that it can be used widely to reduce friction in business transactions. Worldfree's FreeMark is thus the first *economically* as well as technologically engineered cryptocurrency.

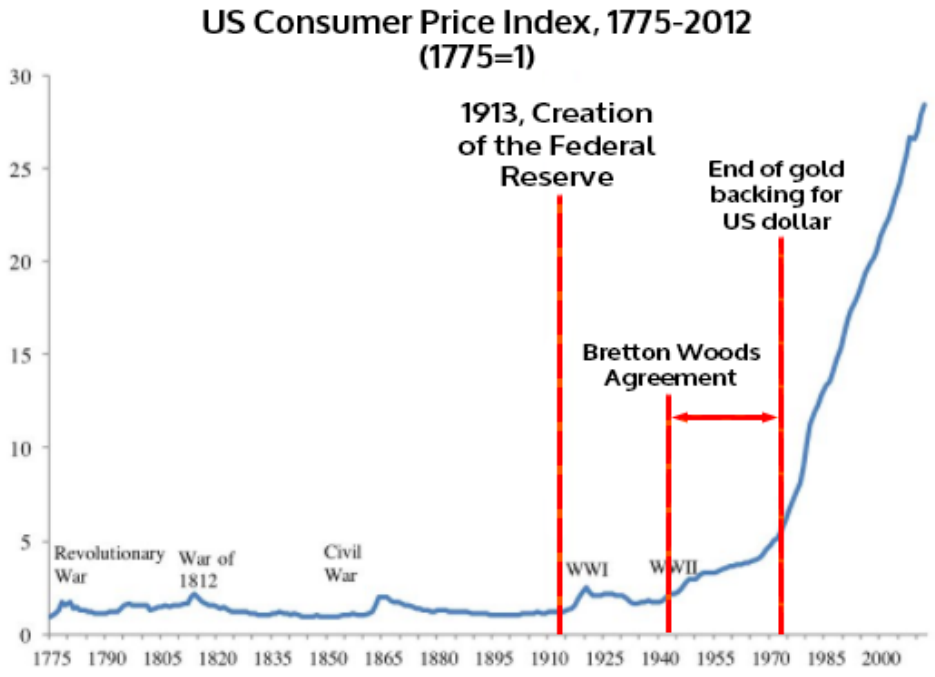
Worldfree has developed and is proposing a solution that accomplishes these objectives. But to understand why our approach works, it is important to understand the causes of inflation and deflation, as well as some other problems with cryptocurrency solutions offered today.

A Really Short History of Modern Currencies

Two factors affect inflation in the price of goods/services (hereafter just referred to as goods): the demand, and the supply of the good. However, money, as a medium of exchange, is also a "good" serving as an intermediary in transactions because it is more convenient and *fungible*, meaning it works for everything and can be used in parts.

The price of money thus affects prices of goods it is traded for, because money itself is subject to the two factors. Importantly money price fluctuations affect all of an economy's prices. When money supply rises, its value can decline, unless it is backed or maintained in some regulating way. Prices of goods thus also reflect the price of the money traded for them.

How the value of money can be maintained is an entirely different and important issue—scarcity is one way, but that is contrary to scalability. Backing by assets is another, as is pegging via a market-making mechanism, as discussed next.



Sources: Bureau of Labor Statistics, Historical Statistics of the United States, and Reinhart and Rogoff (2009)

American Economic Association

The supply of money can be affected by its architecture and backing, and in the age of digital currencies, other factors can be altered in order to reduce inflation as well as deflation, and introduce valuable price stability. We seek to avoid when inflation or deflation accumulate over time, as it undermines people's ability to save money (financial sustainability) or discourages them from spending it (economic growth), respectively.

Consider the above chart from US history. Until the 1930s, the cumulative effect of inflation was negligible—the US dollar was backed by gold and exchangeable for it. In March of 1933, for a number of reasons, including a run on the gold reserves at the Federal Reserve Bank of New York, then-President Roosevelt closed all the banks and forced them to turn over their gold to the Federal Reserve before they could re-open. In April of the same year, he ordered the people of the US to turn over their gold to the government. The Gold Reserve Act in 1934 prohibited private ownership of gold except under license, thus resulting in the United States government owning three-fourths of the world's supply of gold.

After World War 2, which the US and its allies "won", if such a tragedy can be, the Bretton Woods Agreement in 1944 required countries to back their currencies with US dollars rather than gold. The US, in turn, pegged its dollar once again to gold, with each dollar equal to 1/35 of an ounce of gold. The parties of that agreement committed to pegging their currencies to the US dollar by printing more money when their currencies rose, and buying their currencies when they were declining. Before Bretton Woods, most countries followed the gold standard, afterwards not. The IMF was created by Bretton Woods to help countries finance their currency manipulation.

As a consequence, the Bretton Woods Agreement put the US dollar between other nations' currencies and gold. But that caused the US dollar to be more valuable in the practical sense. As it became more valuable, it slowed US exports by making their prices less competitive. President Nixon responded by reducing the dollar's value in relation to gold. Nixon "inflated" the dollar to first to 1/38 of an ounce of gold, then to 1/42 of an ounce.

At that point, people saw that their dollars were going to be worth less and less under Nixon and the US government's fiat command, and started exchanging them for physical gold. That run on Ft. Knox gold caused Nixon to sever altogether the backing of the dollar from gold in 1973, essentially **ending any backing of gold by all the world's currencies**.

What a mess! "Tricky Dicky", as Nixon was known, removed the indirect gold-backing through the US dollar from all the world's currencies. Now they were all left floating with no backing, and since that time, currencies float against each other, reflecting each country's ability to meet their lending obligations, their political behaviours, or economic conditions, or even just who buys how much of one of them relative to another. They all perform in irrational, unpredictable ways, commonly swinging 1-3% on a daily basis, sometimes more than 5%, and often more than 5% over periods of a week.

This undermines global economic activity by making foreign transactions more difficult, increasing risks for companies in general, which they must attempt to allay by getting into the hedging business, distracting them from their primary expertise. Now, the IMF is discussing a unified, global digital currency, which is more of a threat than a good idea. With no way to convert it into assets, there is no way to genuinely value it, not even relative to foreign currencies, as there will be none. The currency will not only be subject to unknowable inflation, but, because it is a digital currency, will open the possibility for the theft of all wealth, from everyone, for whatever any person with special favours in a government might get away with. This is a clear formula for abject tyranny, and would result in an economic calamity.

Today, in have stepped cryptocurrencies as a possible, but rather too complicated solution. For instance, do you hard fork or not? Should you use a side chain or a shard? Technically, how many blockchain programmers can dance on the head of a pin? You will need at least that many to determine whether the open source code does what it is claimed to—or not.

There are now nearly 1,200 new currencies to choose from, and most of them do the exact same thing as present fiat currencies, which is to float against one another and other government currencies wildly—except they are massively *deflationary*, always going up in price, destroying the growth of the economies where they should be operating, because the public recognizes the huge value they might serve if only they were designed properly.

So that is the need for all of the following serious discussion—to get to the bottom of the challenge, and then introduce a new technology that fulfils the promise of distributed cryptocurrencies more capably.

The Problems with Blockchains

Before challenging the current distributed-ledger design paradigm, we should also ask if it is possible that there is a better one, and if we really need one. The scalability problems of blockchain-based cryptocurrencies have, however, also not been solved substantially.

Worldfree started the enterprise expecting to find a firm foundation upon which to interface the company's strength, which is natural language reasoning technology (NLR). *NLR turns information into knowledge* that can be applied through reasoning, using a new theory of deduction, lexicology (meaning), and grammatical representation, to assist in solving knowledge problems. This technology has already been demonstrated in successful commercial software applications used by many G200 firms.

We looked first at the original blockchain presented in Satoshi Nakamoto's paper, *Bitcoin: A Peer-to-Peer Electronic Cash System*, for invalid assumptions. It is a fine and brilliant explanation and examination of the problem, and a wonderful invention. However, as time passes, clearly new developments are generated and problems with earlier approaches discovered. In this particular instance, one assumption underlying Nakamoto's paper is invalid, namely,

> ***"The only way to confirm the absence of a transaction is to be aware of all transactions."***
>
> ***Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, 2008***

Well, this is not actually a valid generalization. We can confirm a transaction has not occurred and changed the ownership of a coin if there is only one instance of a coin (with redundancy using parallel processing memory locks through a distributed hash table). It requires a different and more efficient data structure, and the coin must be identified uniquely and stored at a site other than, and unknown to its owner. Bitcoins do not have unique identities.

This is similar to physical cash—we can confirm that it has not been used if the owner still has it. If he no longer does, it has been spent. This is a very effective method, and the one which Worldfree utilises, along with some other advances in the technology of cryptocurrencies.

Another problem found with the technology was an historical presumption, which will be discussed later, and a novel solution to the "Oracle Problem" was devised using a basket of many commodities (many knowledge origins) that are selected at an arbitrary time by any random system node(s). It matters not how knowledge is arrived at or when, so long as it is set

system wide in a manner no one exactly knows of. There is an issue of synchronicity, but that is resolvable, especially as no one is aware when or that there is a conflict being resolved.

After comprehensive due diligence on the blockchain, in spite of its successful market performance as an investment, and its promise as a digital currency—holding value, fungibility, general security and widespread acceptance—Worldfree did not find the technology adequate for the following reasons:

- Not private enough—in the event a private key is lost or stolen, years of a user's transaction history might be exposed. Acoustic cryptanalysis and quantum computing are two technologies that could threaten the blockchain ecosystem.
- Not secure enough. A person should not fear their money can be hacked, for instance, when bugs are found in coding. There must be some kind of guarantee or insurance put in place. After all, the currencies are digital representations that cost nothing to create, as long as it is done in a pre-established and therefore consent-based manner. That is what having records should facilitate.
- Not scalable—billions of people are expected to use a cryptocurrency. It is not practical to expect a list of all transactions to be kept on every node for consistency, when the list expands infinitely over time. Breaking the list up in any manner introduces the possibility of duplicity, double spending, and complex, time-consuming processing, while abandoning many of the security features, which has already happened to some degree.
- Blockchain mining is programmed to end for Bitcoin to limit supply. When that does, it is questionable whether it will be economical to process transactions.
- Blockchain mining is very expensive from an energy perspective, and the processing occurs to solve hash functions, which have no intrinsic value, essentially wasting energy for nothing. More than 30 TW-hours are used annually that could be used for better purposes.

Worldfree has solved each of these inherent problems with a new design called the ***Nodechain***. To understand it better, it helps to see how it is fundamentally different, politically as well as technologically, as both are integral in the search for a new foundation for economic life, which is the promise of a digital currency.

This process of discovery is a top-down process—the top is the theoretical foundation of a digital currency. Failing to establish this foundation means that the currency may be making unwarranted assumptions that could undermine its widespread use.

"As much as most people would like to think otherwise, the Ethereum protocol and its technological features are a major security risk. Without proper coding and auditing, no money will ever be safe. Criminals know there are weaknesses and they will continue to exploit them for as long as they can."

Jean-Pierre Buntinx, The Merkle, November, 2017

Yet addressing abstract issues is not sufficient. The details of the implementation—how virtual assets are transferred and connected to physical assets, the nature of digital contracts operating under **Digital Prerogative**, discussed next, or the manner in which audited accounts maintain their validity, are just as critical and have to be subsequently explicated and built upon the high-level *substance*.

What is the Digital Prerogative?

Worldfree uses the term ***Digital Prerogative***, which means *establishing a set of rules that apply to all participants in a network, using the network's distributed-nature to maintain stability and uniform applicability*. Being part of a network requires consent to a protocol, without which access is limited. This, in political parlance, is called *the rule of law*. It is a different kind of law, to be sure, and even a different kind of rule, but it shares the same function within a new, virtual realm.

The presumption behind much of modern blockchain and crypto-technology is to assume this Digital Prerogative is established in virtue of majority, or 51% control. This is because the original blockchain in its Bitcoin manifestation is ruled by 51% or more control. This is a politically attractive idea at present, because what we today call "democratic" systems are designed around this premise. The presumption is that if this sort of governance by consensus is good enough for governments, therefore it is good enough for Digital Prerogative.

We should, by responsible necessity, weave politics in and out of a conversation on a new technology and its practical implications in finance, business and social affairs. Many people have already recognized the substantial role politics plays in digital currencies. Thus, it is relevant to address these political issues in a world seeking the benefits of a technological solution.

One thing is certain from the outset; whatever people choose must be entirely consent-based. However, this idea, frankly, is contrary to the consensus foundation of blockchains. If 51% choose what is right, then up to 49% have not fundamentally consented. Votes can be devised for virtually any issue; consequently, *a consensus algorithm institutionalizes unfairness* to minority voters.

The question naturally is how to resolve this contradiction, which is an *injustice* in the classical sense of that term. Could it not be that the consensus paradigm is a *problem* of modern society, and therefore integrating the presumption with new technology might not offer the hoped for social and political betterment?

Consensus itself is a problem in cryptocurrencies when there are too many members in a network that must be consulted—it is storage and computationally expensive and stunts innovation and enhancement of the currency with unnecessary bureaucracy. All a user really wants to know is whether he is being passed a valid coin that has not been duplicated. The user does not generally want to know the full history of the coin or all everyone else's transactions—all that data is duplicitous and thus too costly.

Consent vs Consensus

In fact, scalability problems with today's blockchains are threatening their growth, or at least stunting their mainstream adoption, and the consensus aspect in no small way is an issue brought up consistently in the discussion. In order to discover the problem in these conflicting pursuits, consent and consensus, a misunderstanding of political history needs to be clarified. It will then be seen that **this political clarification has fascinating technological implications**.

To begin, we must return to ancient Greece. We know the Athenian society as the birthplace of consensus governance, so if we are to understand *consensus authority* better, it makes sense to start with its origination.

Briefly, the Athenian constitution established two branches of government, the Assembly, which consisted of all citizens of Athens, however limited that suffrage was, and the Council, which prepared the cases that were brought before the Assembly for discussion and a vote,

managed public finances, the police, and all general functions of government except military command.

This form of government was much more distributed politically than other societies prior or contemporary to it, as we learn from the ancient literature. There were implementations of central authority systems, also called monarchy, as well as oligarchy, and democracy, as Aristotle tells us. Yes, it makes sense to look at how these different approaches to authority functioned, as we enter the new age of Digital Prerogative.

The modern world presumes that the Council was an elected body, perhaps elected by the Assembly. This is how governments of the western societies do this today, and they call modern governments "democracies".

However, that is not how the Council of Athens was chosen. Here we must slow down for a moment, ask hard questions, think carefully, and check to see if our collective presumption is correct. If the Assembly did not elect the Council, how were they chosen? Importantly, could this have any implications for better governance, digital or political, in our own time?

It is the case that the *entirety* of the governing Athenian Council was chosen by *sortition*, or random selection, not by consensus. Each citizen had an opportunity when a Council post was available to place their name in an urn, from which was drawn at random the new Council members.

> ***"...the whole administration of the state was in the hands of men appointed by lot: the serious work of the law courts, of the execution of the laws, of police, of public finance, in short of every department (with the exception of actual commands in the army) was done by officials so chosen."***
>
> ***Election by Lot at Athens*, James W. Headlam, Cambridge, 1891**

Is this important? Let us ask how this might affect the governance of Athens, and perhaps better understand why they *engineered* their government to function in this way. *The ancient Athenians recognized that the power of random selection could be used to limit outside influence on who was chosen to positions of authority.*

Today, if a person wants to seek election, they must get sponsors, generally political parties, who help them directly or indirectly raise funding so they can mount a campaign. In the cryptocurrency world, if you want to influence the manner in which the blockchain functions, you must invest in the hardware to be a miner, validating transactions cryptographically, or in a full node, where you hold a copy of the valid blockchain files.

The modern consensus approach introduces some problems that were not inherent in the original Athenian democracy. Firstly, it limits who can exercise authority in the management and direction of the blockchain, or the political process, to those who have access to funding, or can through favour, or importantly sponsor, gain funding. Critically, consensus-based leadership selection introduces a conduit through which special interests can affect authority. Sponsors, or those who have an interest in the outcome of the decisions of authority in the modern form of democracy, compete to influence the candidates, and if the latter are selected, their decisions while in power.

This influence did not substantially exist in ancient Athens, because it was limited by using random selection. We can go into more detail on these issues, but for the current topic, it is better to curtail those discussions and cut right to the chase.

We do not have democracies, and it is **the consensus foundation of modern society that makes political corruption possible**—at least it facilitates bias in the system contrary to the general interest. That is one reason the incumbent establishment wholeheartedly endorses it. The Athenians had the real democracy; today's societies have something quite different. The Athenians were aware of the corrupting force of outside interests, and limited the effects upon official selection using sortition. Not so in our modern world.

We can pretend that rational governments are the result of the competition between the various interests—the idea behind modern "democracy". But that does not follow. The results of the competition between the various interests are the interests that are strongest—have greater influence on the press, more money, more political-connection influence. This has nothing to do with best practices of governance, or implementing the most profound and just principles of governance. It does however encourage society to factionate—to choose a side upon which they can hang their hopes, and share in the booty should they win. For a discussion on the problems with faction-based governance, see George Washington's Farewell Address, which seems to have been ignored by subsequent generations of Americans.

Today's societies use the 51% consensus model, destroying the "rule of law and not of men", as the classical ideal has long been expressed. Consensus is the rule of most influence, not of best governance. As said earlier, it is contrary to consent of the governed, as the party strongest party's interests will win, and thus be imposed upon the weaker minority without their consent. Thus blockchain technology, in its current form, is built upon a faulty foundation that ensures the propagation of injustice.

Furthermore, "knowledge by consensus" is fundamentally *contrary to science*. An idea does not derive its stature as knowledge from how many people, or the authority of those who advocate it. There was a consensus in 1400 AD that the Earth was flat. Was it flat? There was a consensus in 1500 AD that heavier objects fell faster, as stated by Aristotle. Do they? No, Galileo showed they did not, and the consensus model of knowledge was responsible for the scientific-method founder's life-imprisonment under house arrest.

Consensus-based arguments for 'truth' are antipathetic to human conceptual evolution. We derive the sciences from empirical origins, and then validate ideas with respect to perceptual evidence, not to the opinions of others. The general espousal of the epistemic legitimacy of consensus is sending the wrong signal.

"The public, therefore, among a democratic people, has a singular power... it does not persuade others to its beliefs, but it imposes them..."

Alexis de Tocqueville

Consensus, what de Tocqueville wrongly interpreted as democracy, is contrary to liberty, and much of his comments are contradictory. He was correct, however, about the dictatorial nature of consensus-based authority.

Consensus may have applied in the Athenian Assembly, but only to decisions on courses of action *already prepared* by the relatively unbiased Council. Interests in the Assembly could collide, collude, and battle it out in rational or emotional oratory, and the Assembly made the decision of the winner. Anyone could speak if they wished, allowing unpopular or important issues to be brought up. This gave the decisions collective buy-in, which is practical for implementation reasons, but not a theoretical endorsement, although it provided a better opportunity for genuine concerns to be voiced before it was too late.

The ancient Athenian Council also prepared the cases put before the Assembly and thus framed the context of the ultimately decisions, influencing the nature of the discussions. This system is consensus built upon rational design, but in an organizational structure which allowed continual adaptability, while minimising the influence of outside interests. It is different than today's democracies generally, but *is* the original democracy.

This distinction applies to both the modern form of democracy as well as the blockchain functioning. Satoshi Nakamoto et al founded a rational model, and attempted to give it a static structure using a form of Digital Prerogative, while relying upon the consensus for its enduring direction. A **consensus-based authority is fundamentally oligarchic**, as is evolving on implementations such as Bitcoin and Ethereum, where in the former wealthy miners make the rules, and the latter is more explicit in that Proof of Stake means proof of oligarchic status.

That emerging consensus is also showing that it is fundamentally biased, as blockchain miners make decisions under the influence of their own interests. It is assumed wrongly that those who have committed the most assets to a cryptocurrency are most committed to its proper regulation, which simply is not so. Roger Ver recoils in horror as the blockchain ideal is undermined by the consensus, then moves to another of the same solutions with the Bitcoin cash, just with a slightly higher block size. Therefore, the blockchain, and the democratic institutions we live under, have a fundamental error that early civilizations had already recognized and to some degree overcome. Modern society has been and continues to be sold a faulty bill of goods.

2 The Nodechain

The Athenian's random selection in sortition gives the power to segregate corruption of authority from rational self-interests. Applied in the digital currency world, a random person, without knowledge of the parties to a transaction, will process the transaction for a fee. If he cannot know or contact the parties, and the parties do not know him, then if he depends upon the network and agrees to the fees that benefit him, he will process the transaction. All these things are achievable on a computer network.

This looks an awful lot like ancient-Athenian sortition.

Worldfree, with its Nodechain technology, is introducing a paradigm of Digital Prerogative that is more consistent with the original democracy, taking advantage of randomness and cloaking as tools for ensuring financial security and legitimacy to a greater degree than other alternatives. If a million computers are on a network, all running the same audited and verified software, they each can be paid to validate other people's transactions.

Users of cryptocurrencies do not need to know who the transactions come from, or even that the validation is occurring because it happens so quickly. The Nodechain is better than a blockchain—cleaner, simpler, more secure yet still taking advantage of distributed processing.

The patent-pending Nodechain utilizes the random selection or sortition method of the Athenian democracy, and does away with 51% consensus, producing a much more powerful validation methodology based on two ideas:

1. A function of a hash pointer into a network-wide distributed file provides an address that the owner of the address cannot know in advance of his involvement in the transaction, thus cannot practically be corrupt. The nodes are also operating under the same system, which can identify all the accepted participants.
2. A small, random selection from a large sample size, with near-zero variance produce much higher probabilities of detecting anomalies.

In addition, the Nodechain makes sure the user cannot modify his own transaction history. Basically, he will be found out by other parties, and all his money will not function, by modifying the crypto-signature upon which access is facilitated. This actually benefits the Worldfree community a tiny bit by reducing the money supply, at least until the transgressor corrects it.

The Nodechain maintains the network in 100% compliance at all times (a statistical variance of zero). This makes sense, as there should be no deviation in a financial system, and it cannot be allowed to operate in that state. It would have to be stopped, the violation discovered, and continued when rectified.

In the Worldfree Network's massively parallel system, this is OK, as just the transaction will be stopped, and the rest of the system can continue functioning, with the faulted nodes moved outside the network until rectified.

The Nodechain also has redundancy of data, which is maintained in the background, but without massive redundancy of crypto-processing overhead.

The mapping function prioritizes the storage sites, so when one site is "sleeping", or offline, it drops down to the next data site, correcting the earlier ones when they awaken, where all the altered nodes are locked until confirmed. The Worldfree paradigm utilizes an advanced distributed hashing table (DHT) for communications via a modified overlay.

Ultimately, the design of a hash algorithm ensures that a small change in the data produces a large difference in hash values. So why would we need hundreds of transactions to prove the final one? Only a few entries are redundant enough. Architecting the system more carefully, rather than treating Satoshi et al, founder(s) of Bitcoin, as having the final word on the field, results in a simpler, more elegant and secure model.

Instead of archiving all network transactions on every node, the Worldfree approach is to just maintain a distributed record of currency tokens. This has the advantages of:

1. Requiring only a short, *very* secure distributed-list of the last few owners to check. A node records only its own transactions, but in an ***auditable***, permanent and recoverable way (as long as backups are maintained)
2. Creating a faster, lighter, cleaner, more private, much more scalable network
3. Engineered in resistance to delay-type attacks as massively parallel, random nature of transaction processing makes them impractical, and because only one transaction would be delayed, basically harmless
4. More security in the advent of the cryptographic code being cracked by acoustic cryptanalysis or quantum computers, as very few parties would be affected, and the loss is alleviated by the failsafe redundancies.

Worldfree's Nodechain technology incorporates the following genuine innovations:

1. Stable currency—backed by basket of 20 commodities to produce a normalized standard for a currency
2. Multi-level, random sampling to take advantage of low statistical variance
3. Eliminates double spending with a distributed coin ownership paradigm
4. Discontinues the use of ineffective and costly 51% consensus standards.

The most problematic challenge with making blockchain technology widely used, aside from its massively deflationary design, is its inherent lack of scalability.

"Currently, all blockchain consensus protocols (e.g. Bitcoin, Ethereum, Ripple, and Tendermint) have a challenging limitation: every fully participating node in the network must process every transaction."

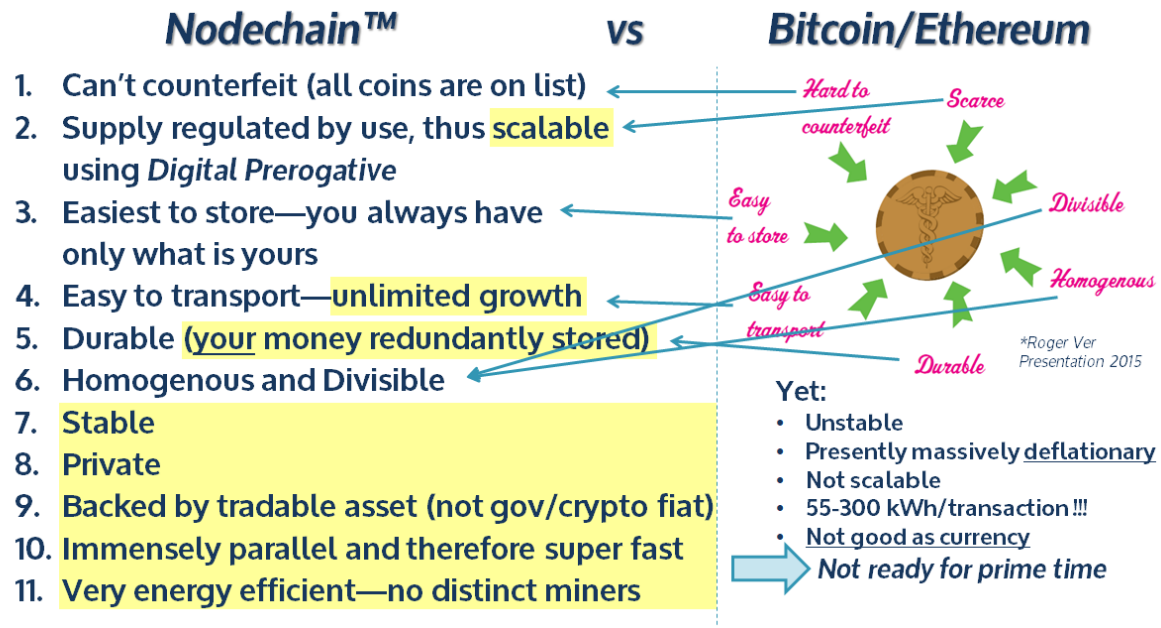
Preethi Kasireddy, August, 2017, Link

As this quote makes clear, the primary security technique promoted as inherent in the blockchain is that every participant in a network processes all the transactions. This is sort-of the "independent judgement" of the blockchain idea.

Worldfree's Nodechain, instead uses randomness and hash-pointer cloaking to assure independent judgement, and literally makes that judgement automated, as it is only a question of owner consent that is verified by each miner node in a transaction. But the difference in storage requirements between the two approaches is enormous—the Nodechain does not require great storage, or huge processing times to accomplish transaction verification.

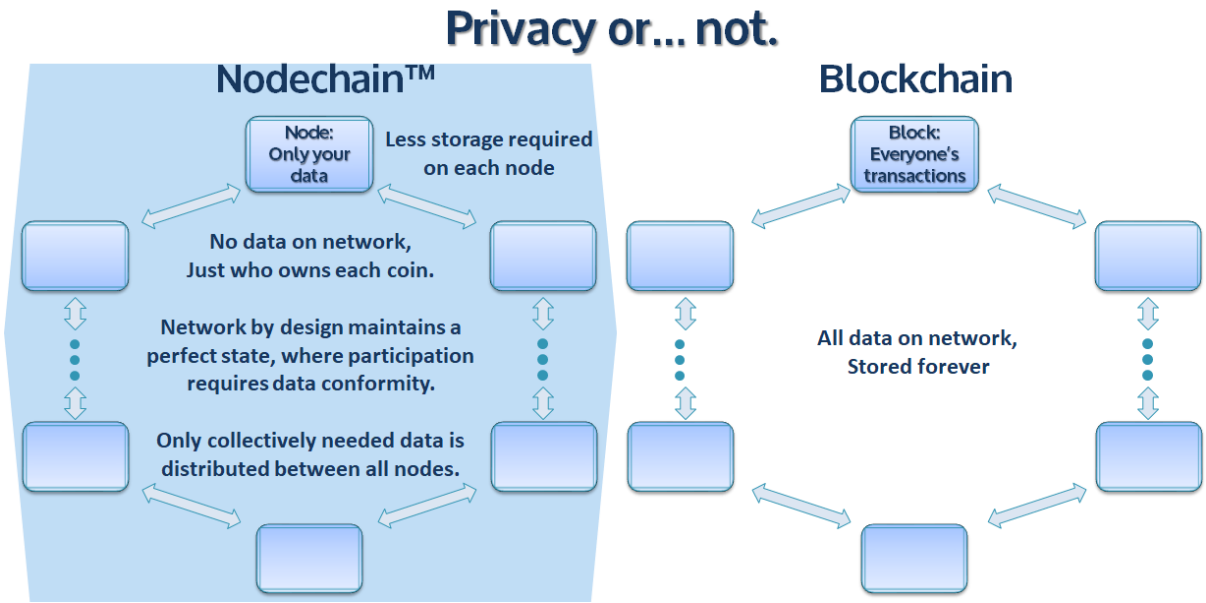
Randomness is More Effective than Consensus

Both the Nodechain and the blockchain facilitate distributed authority, but only the Nodechain accomplishes a controlled, pre-consented Digital Prerogative that requires justice be served at the transaction level. Consent is maintained on the Nodechain, without the mob-rule or oligarchic injustice of the consensus on the blockchain. The chart below outlines a comparison of the Nodechain with the blockchain approach.



Central to the problem with blockchains is that in the event of a security breech—whether by a well-funded or a criminal organization—all of a person's potentially years of transaction history could be disclosed to the world. This is because it is all maintained on the blockchain, which is public.

This does not make sense. Worldfree's solution is to move all the data off the public network—this is an inherent threat within the blockchain technology that is discouraging the more widespread use of the currency, which is less than 1% of global transactions.

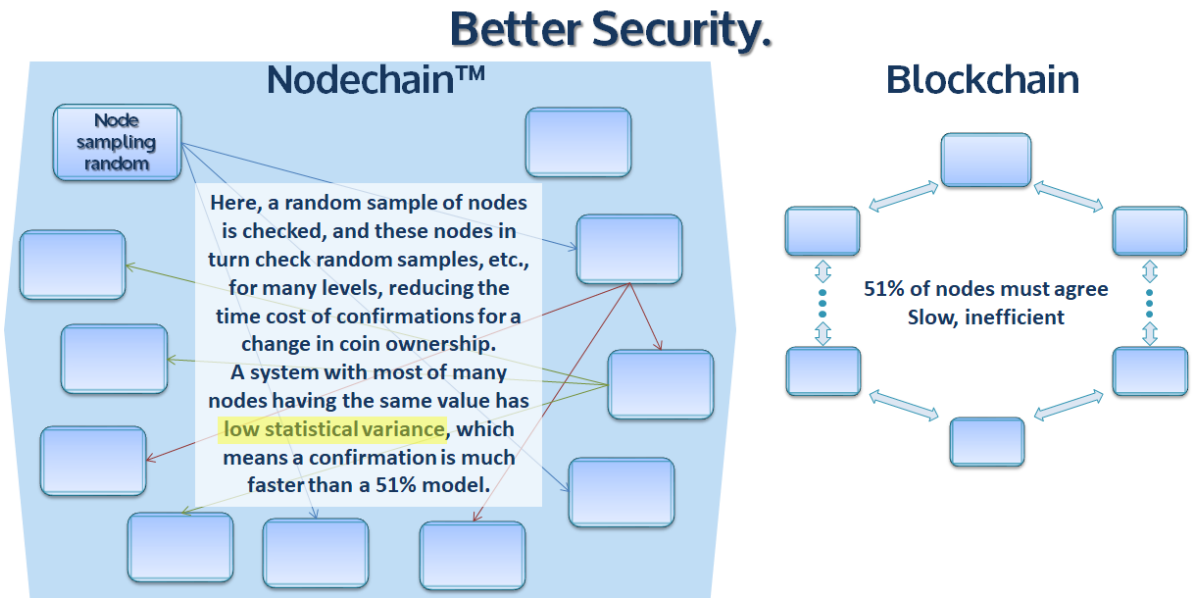


It is still possible, through astute design, to ensure that there is an accurate transaction record on every node that cannot be modified by its user. This requires that any software participant in the network demonstrate conformity to security standards—a much better idea than having anyone accessing a network with any kind of software system. It is not feasible to design against the infinite possible ways someone might build in an open software network.

However, this does not in any way limit who can participate in the network. On the contrary, anyone can utilize a Worldfree system for transactions and global business, as a sound-money alternative to other types of currencies.

This makes sense. With increasing requirements to fulfil Know Your Customer (KYC) and Anti-Money Laundering (AML) regulatory standards, how can anyone expect these to be met with an arbitrarily or inadequately funded firm developing software off-the-cuff?

It's an information highway. Do you want a jalopy, or a Mercedes? Both should be allowed to operate, unquestionably. But which would you rather utilize on a daily basis? There is certainly a need for a very well-designed technology to facilitate global commerce and economic growth in an open yet secure way.



As an example, consider the following steps in a Nodechain validation process:

1. Alice initiates a transaction to purchase something from Bob, for say FM10.
2. The two agree on the price and terms.
3. Alice sends to Bob the identification of the coins she will use in the transaction in encrypted communications.
4. Bob's system checks to see that Alice owns the coins she intends to use. This occurs by Bob's system selecting a small number of random nodes in the Worldfree Network, and these nodes in turn check the same small number of random nodes, etc., for a few levels, all occurring simultaneously thus reducing the time-cost of confirmations for a change in coin ownership.
5. If any of the randomly-selected nodes in the network contradicts Alice's claim, it is a red flag. If there is default, the rest of the system continues, with Alice's transactions halted from her own device. The memory location (unknown to any network user) is locked so that the ownership of the coin at that location cannot be altered until the systems resolve the issue in collaboration with Worldfree.

6. Once the coin's owner is verified, the storage node is contacted, and it verifies with Alice of the change in ownership, which is set to Bob. Alice is set as a former owner, then the storage cell unlocked and made available for subsequent users.
7. An escrow step can be used as Alice waits to receive the goods sent by Bob.

A coin cannot change hands without the consent of its owner. The transaction records are maintained on Alice and Bob's systems, in both an accessible and a secure auditable format. Any number of parties can be part of the transaction, or allowed to audit the transaction.

To get 99% confidence level on the probability of conformity, for a 1% width of confidence level, only a small number of nodes in relation to the network size need be polled, because of the low statistical variance. For instance, in a population of 100,000 network members, to have a 99% confidence in the veracity of ownership of a coin, knowing that there is a variance of less than 1%, a sample size of 653 would do.

That means less than 1% of network members—0.653% of the population for this example—or much, much less than 51% need be contacted for a high confidence level, and this declines as the network grows in size.

In addition, each transaction involves an average of 20 different FreeMark denominations, thus risk per transaction is lower still as a percentage of the funds in the transaction. Furthermore, by using random sampling of random samplers, more network members are involved in carrying out the millisecond verifications, distributing the processing load more evenly over the network.

Even this use of low-variance, random selection is itself a security redundancy in the Nodechain because of the requirement that the randomly-selected verifying network node contact the owner of a coin to confirm his involvement in the transaction facilitates. The Nodechain nodes do not change without permission from their hardware owner, who must get permission from the owner of the coin that he has stored before changing it.

In essence, any node who asserted ownership of a coin would not know who was going to verify it, and could not influence that process as it would be occurring on the recipient's processor.

There are no miners in this transaction, other than the storage nodes and the verification nodes, which all share the same system as Alice and Bob, who also participate in validating for the rest of the network. As no one works for free, Alice and Bob divvy up a small transaction charge to pay all the other nodes, and in turn receive pay directly when they participate in transaction validation for others. This verification payment system can be lucrative for the members of the Worldfree Network who choose to participate by keeping their nodes on for a percentage level of the time.

Compare this to Bitcoin of today, where the requirement of signatures has been removed with SegWit:

> ***"As a light-weight client, you are not validating signatures, even though they are part of the transactions you still have to download them. If you are using a full-node that is syncing historical data, you don't actually validate all of the signatures in there"***
>
> ***Pieter Wuille, developer of Segregated Witness protocol implemented in 2017***

This means few people are checking the validity of most of the transactions that are carried out on the Bitcoin network anyway, except for the miners, and they will have little motivation for

mining when the maximum number of Bitcoins has been reached. What good is military-grade security technology if its use is stripped from the blockchain because it is storing too much information to be scalable?

Worldfree's Nodechain provides a much more secure technology that abandons the faulty consensus algorithm and replaces it with a consent-based algorithm—which is what ownership is really about. Liberty itself can best be described as a consent-based society.

> ***"Bitcoin is not suited for mass-adoption in its current form, and development is glacially slow, to put it mildly."***
>
> ***Guy Brandon, Sr. Editor, BitScan.com, February, 2017***

Bitcoin development is "glacially slow" because the consensus model makes development a political endeavour, where any change in the system requires a majority of all parties to agree—an innovation nightmare! When the Bitcoin started, anyone could do anything, now it is fixed, in spite of it being a technology early in its evolution.

The Worldfree development and delivery methodology, on the contrary, facilitates rational and continuous design improvement by the team originating its derivation, and thus longer-term conformity to design principles by using a Technological Constitution to regulate its future design in the manner of the ancient Athenians. There is no perfect world—if the development continues to provide the best solution for Worldfree customers, they will continue to do business with us. Otherwise they will move their money elsewhere.

Worldfree interests are of course served but in a way that aligns them with the rest of the group—we earn a percentage of revenue that is shared with the group. Our success is a reflection of the value we deliver to people who did not have our novel and better-designed service before. Our clients consent to the model in advance and that agreement becomes part of the Digital Prerogative that rules the subsequently more just relationship.

It is a system and technology built on explicit principles, and developed and enhanced over time in an innovative manner while remaining true to those principles. People who disagree with the principles do not join—they can use the reigning unjust, consensus paradigm and suffer the downsides when those whose interests they advocate lose the battle.

Distributed vs Centralized Networks

Worldfree's Nodechain is a distributed authority paradigm just as is Bitcoin, for instance, with the major difference being that all nodes have the exact *same* functionality, as shown in a drawing below. The *central* development effort by Worldfree occurs in a private manner, with specific facets of its functionality audited (eventually by a firm chosen through sortition), but more importantly rather than open source, its functionality is validated by its demonstration in transactions.

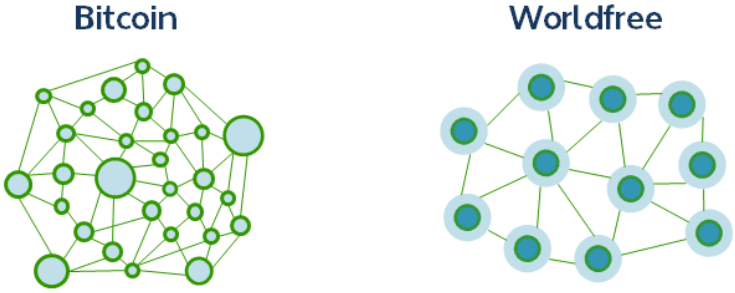
Functionality validation, rather than code validation, keeps the code more secure and less vulnerable to attacks, but it also makes it easier for anyone to validate the functionality, which they can do at any time, without knowing anything about how to code, which provides greater confidence to its users because they do not have to bear significant costs to assess its functioning, for instance paying expensive programmers to solve problems.

It is important for centralized-distribution schemes that they facilitate opt-out—this is the consent part, without consensus. The Worldfree Network can be said to have unanimous consensus because it has the consent of all parties. In political centralization, all kinds of human rights violations can precipitate unless regulated by consent, again different than consensus.

Centralized control also has an interest in and of itself, contrary to the interest of the other parties, which it defends at the expense of the other parties. This again is one reason why this discussion is necessarily political, as the implications in the discussion are obvious as advocates of one system or another commonly claim superiority based upon some scientific basis, often without merit or substance.

The promise of distributed control offered by Blockchain and other new forms of cryptocurrency are grounded in political hopes. The world is not happy with its political alternatives. Debate it as you will, you will have to admit it is debatable.

So let us digress slightly to see how politics already is at the core of the distributed technology revolution, whether or not we like or want to admit the dinosaur in the room.



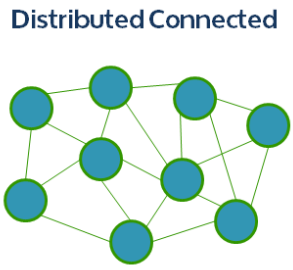
Today's Bitcoin, for instance idealized above, starts as a completely shared consensus network, with the miners having the most responsibility and influence in the network's decision, then full nodes being lower on the hierarchy of authority. And as you walk down that hierarchy of authority, you get to the owners of Bitcoin who really have very little responsibility or authority. Bitcoin is not equally distributed authority.

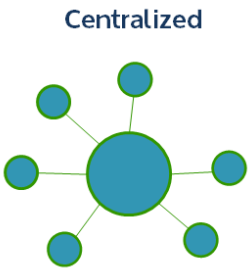
Maybe the Worldfree 'halo' is pushing it, but it is meant to symbolize the shared nature of all the nodes in the Worldfree Nodechain, the lighter blue representing transparency through auditing and functional validation. In Bitcoin, there are different levels of *authority* in the system, distributed to anyone who wants to pay for them. In Worldfree, everyone has the same system and thus operates under the same Digital Prerogative paradigm. If someone wants to mine, they simply turn on that functionality (there will be a Digital Prerogative-limited number of licenses available on an open market) for the same productivity-based compensation as everyone else.

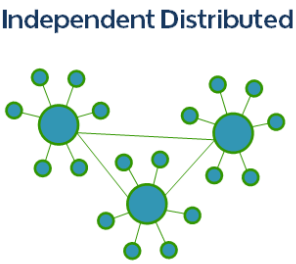
Again, the *Digital Prerogative in the Bitcoin system is not distributed equally*. Apart from protestations to the contrary, the implementation is not the theory.

Worldfree does not pretend to be the perfect alternative, but we are a substantially different one, built upon our patent-pending Nodechain technology. *Each node in the Nodechain has the same authority*.

It is not a given that distributed authority is necessarily the best approach in all cases. It does not follow that authority, itself subject to performance constraints and inconsistencies, should or even can always be equally distributed. Where competency is rare or expensive, it may be more practical for it to occur at a centralized site (such as in computer programming). For military authority, for example, there has to be a balance to best maintain stability and non-conflict (less competent people cannot have the exact same authority as competent ones). Consider the alternatives, for instance, below in a set of graphs presenting three different types of distributed network paradigms.



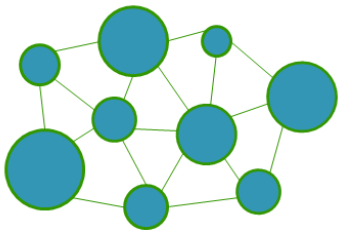


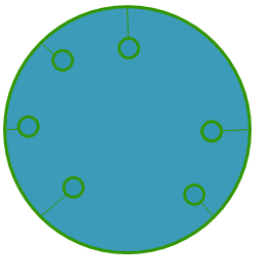


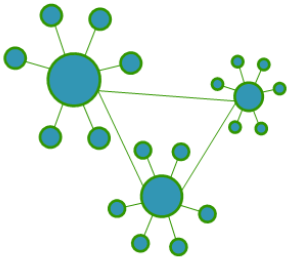
For instance, centralization of resource management has advantages. Consider the power industry. Originally, power was centralized where it existed around water wheels, wind mills, and energy sources such as fires used for metallurgy or cooking. When capital and operational costs are high, distributed plants are unjustifiable. To be explicit, in such conditions centralization of *authority and operation* is advantageous. As technologies improved, the costs of distribution fall, and thus more control at the point of use is facilitated and preferred.

Today we have ever greater electrical generation at the point of use, for instance solar panels that can be placed on a home or a business roof. When generators are or were used as a distributed power source, they have as one limitation the cost of fuel transportation. But with advances in solar or wind-power technology, the energy is located at the point of use already, giving greater control of its use and costs, thus independence of operation.

To break with societal standards, we see the European Union, derived as an idea in the 1950s at the highpoint of the centralized Soviet Union, applying the concept of centralization of authority, reducing distributed authority. This discussed for the simple reason to show how political issues affect technological trends, influencing how they are perceived, or preconceived. The graphs below show some practical manifestations of different models of distributed authority.







Returning the conversation to the less controversial technical fields, the same is happening with the Internet of Things (IoT), where computational power is being brought to task at the edge of networks, rather than just at the centre, as the costs of computational power drops.

This applies to our current topic, which is as much about redundant **distributed authority** as it is about distributed intelligence. Worldfree is introducing the concept of Digital Prerogative, which is the idea that power can be established, by individual consent and as a condition to participation and enforced in virtue of its technological integration with a system. The application of this concept has occurred before, for instance in the banking software industry, where better banking regulation was possible because it flowed through the software, which established corrigibly the patterns of behaviour of those involved in the application of laws. However, this has disadvantages if laws become oppressive, impractical, or unalterable by the distributed community.

In distributed cryptocurrencies, the authority for maintaining contracts and financial commitments is in the process of being established by Digital Prerogative, using the blockchain, and Worldfree's own Nodechain, for a much more scalable cryptocurrency.

The question of how authority should be best distributed is complex, depending upon the nature of the medium, the problems encountered, etc. Importantly, we cannot assume that the distribution of all authority is necessarily beneficial, without carefully considering the alternatives.

Worldfree provides other advantages, such as contract templates, and a non-technical method of making new ones. It is not assumed that to function on the network you have to have much understanding of how it works.

The Nodechain uses state-of-the-art peer-to-peer technology that ensures anonymity, while facilitating compliance issues through a unique source of design. The central design source provides advantages, such as better security, ability to pay for auditing, improved ability to enhance the system, and other financial opportunities that can accrue to the members because the network itself provides economies of scale that can be tapped for everyone's benefit.

Ultimately, by delivering a complete system that is demonstrable through the use of a number of testing examples at the user level, Worldfree's approach provides a basis for trust for the greater part of the user base who are not technical. Issues of trust invariably involve performance, which invariably is affected by forces outside anyone's control.

This issue of performance lies at every question of "trust" being addressed today. Governments get their money in advance, and do not suffer legal recourse, as they rule the courts. Distributing authority by building peer-to-peer distributed software networks is better, but parallel processing systems are some of the most difficult to design and develop, because their performance involves potentially millions of software systems interacting in complex ways, and possibly as many threats to them from outside hackers. All this is occurring in a rapidly evolving technological world, with many inherited or legacy systems that still must be communicated with.

People are more important than governments, and certainly more important than technology. But we have to work in a world subject to the limitations of each to deliver benefit to people, and receive it ourselves, as we are people, too.

The most important issue at hand is economic, not technological: a currency, to serve its primary function, must maintain stability with respect to the values it trades. Worldfree additionally facilitates you earning a high return on your savings, and having a better place to do business, because we endorse your *right* to get something for something.

3 The FreeMark

Let us say you were selling your vehicle. If someone was to offer you Bitcoins in payment, and the price was increasing, would you take them? What if they were losing value quickly, or very unstable? Would you raise your price in the currency to cover the potential downside?

And if you were buying something with a Bitcoin, and it were rising quickly, would you still use it as a currency to pay for things? What if it were dropping in value quickly—would you be more inclined to spend it sooner?

> ***"<Bitcoins are>…still rarely used to purchase actual goods or services, making it almost entirely a vehicle for speculation."***
>
> ***Investing.com, 21 November, 2017***

The cryptocurrency world is currently in an economic depression. Few people use digital currencies to buy actual goods or services because the currencies are not engineered from an economic perspective—cryptocurrencies are too unstable to be practical mediums of exchange. Many of the promoters of the various coins seem to think reality itself has changed.

Massive deflation is stunting the crypto economy. What is deflation? Deflation is when the price of goods drops in relation to the currency that buys them. This has a causal effect—when buyers know their currency will be worth more in the future, they put off their decisions to purchase things. In the crypto-world, this is a disaster. It means people get into cryptocurrencies until their prices go up, then they get out of them and spend their money in other currencies.

Yet this very real problem of varying currency values has importance all over the world, in varying degrees. For instance, in Switzerland you would not worry about risks to the financial system, however, if you lived in other countries, that is not the case, as the following quote explains:

> ***"Growing up in Patagonia (Argentina) I saw my family lose everything 3 times in one childhood. One time because it was inflation, another time is was because of confiscation of bank accounts and the last time it was because of an enormous devaluation."***
>
> ***"As a family you remember that when it happens and it takes a long time to recover. We saw the whole country—all of our friends and family go through that."***
>
> ***Wences Casares, CEO of Xapo***

Today, cryptocurrencies, if they are successful, rise in price—they have been engineered wrongly—and they make a terrible medium for the purpose of exchange. They are best if they are stable, because that is what producers want to do business in. Buyers too want stable currencies—they want to know that their money will not be worth less in the future because of inflation.

If the whole reason that investors buy currencies is to realize appreciation in the currency, then the whole crypto-project is backward. Currencies need to be stable to do what they were invented for originally, to serve as mediums of exchange.

The cryptocurrencies themselves are fiat currencies—they exist because the collective says they do. Yet they have no more exchange value than government fiat currencies. Rather than being a return to a natural form of money that has or represents a value in itself, the cryptos are taking the worst part of today's baseless government fiat currencies and propagating the error.

"Fiat" means "an arbitrary order"—cryptocurrencies exist because a group of people say they have value, whether a government or a group of private persons. This is not the same as a currency which is pegged to a value with a price set by a market of buyers who have a use for the value. A currency is "backed" when behind it is the right to purchase or exchange the currency for that value. Different societies through time have pegged their currencies to different goods, for instance, copper, silver, gold or other substances of real value.

Worldfree is taking advantage of many of the ideas in the field, very many good ideas, cryptographic as well as advanced network and data management concepts and technological developments, but "architecting" them better—more functionally-defined, and with a better understanding of economic realities.

"...the most successful countries have always been those that adopted a policy of stable money, rather than manipulated money. The reason for this is simple: it is a lot easier and more effective to do business that way. Productivity improves. People become wealthier. It's no more complicated than that."

Nathan Lewis, Forbes

In the Worldfree Network, the FreeMark (f), a compression and concatenation of "Free Market", is a *stable digital currency* pegged to a basket of commodities as priced in different currency localities. The system assigns an f$ a value of $1.00 initially, normalized to each of the various currency baskets in f£, f€, etc. The f of one currency has an exchange value against f of another within the Worldfree Network.

To understand how f is backed, consider that one of the 20 commodities is gold, which makes up 1/20th of the value of the FreeMark. The full list of highly-traded commodities is:

Rice	Cocoa	Aluminium	Gold
Sugar	Soybean	Nickel	Natural gas
Wheat	Cotton	Zinc	Brent Crude
Corn	Oats	Iron ore	WTI Crude Oil
Coffee	Copper	Silver	Ethanol

In the event one of the commodities becomes unstable outside of an explicit, Digital Prerogative-controlled standard deviation over a number of time frames, another would be selected to replace it. The purpose is to have a stable currency, backed by many commodities that are not volatile but are a genuine "value" as in the sense of value in human affairs. Excepting any Digital Prerogative regulated changes, the same commodities will be used as a standard to which the FreeMark is maintained. How this is done is discussed more thoroughly in the section on the Atomic Central Bank.

Taking for example gold, on the first day of its establishment, a f$ will be pegged to $0.05 of gold, which is about $41.70 per gram presently. Thus $0.05 would be equal to 0.0012 grams

of gold if this were day 1. In 20 years after day 1, the f$ will still be worth 0.0012 grams plus the other commodity values.

Sometimes the Bitcoin promoters deride gold as if it were only chosen as a currency backing because it is "shiny" or "pretty". It was chosen because it was easy to form yet was a metal, non-corrosive and resilient over time—it could be buried without losing it, for example. Other metals, such as silver and copper, also served as money, but do corrode with oxidation. Gold has continued to be a value through history, serving as a raw material for ornament, being exotic in some European states (historically), valued still because of its workability and metallic attributes.

Today, gold is recognized as a fantastic material for its other properties, it is one of the most dense, non-radioactive materials, which means smaller volumes for the same mass, and values of commodities are generally correlated and measured with mass (lesser volume per mass means more easily transportable). It is inert, and non-toxic. It is an excellent conductor, important because it is non-corrosive, and serves as a plating material for many electrical contacts. Thus gold is not universally recognized solely because of its ornament value—it has a utilitarian or functional substance, and for that reason it has served as a basis for coinage and currency-backing. It is not the perfect commodity, because it is limited in quantity, and thus could not reasonably be a backing for the transactions of 7 billion people.

Generally, we still need to know that there is genuine value behind the currencies we use for our mediums of exchange. Instability makes currencies good for forex traders, perhaps, who can follow the ticks and may want volatility, but it does not make one good as a *standard* of exchange. The FreeMark is more precisely and unequivocally defined as a standard in relation to something physical.

The FreeMark returns a value to currency savers the more the money supply expands. **Inherent in the design, through automatic Digital Prerogative, is an increase in each owner's holdings** as more FreeMarks are introduced into the market. The percentage increase is 5% of the money supply increase (slightly recursive but asymptotic).

Normally, increasing the money supply for fiat currencies produces inflation, making a currency less valuable—worth fewer goods and services on a per unit basis.

Not with the FreeMark, where holders of the currency get more of it if there is more introduced into circulation. This occurs as the price is maintained stable through automatic market-making, as part of the Digital Prerogative that runs on all the nodes in a network where it functions.

The Digital Prerogative is immutable; therefore owners can expect money supply expansion to be an opportunity, rather than a disadvantage, and it works and cannot be stopped, so long as the conditions which cause it continue. There is inherent in the system safeguards, of course, that regulate the distribution in the event that the percentage backing of the money supply decline below a certain level.

Instead of expecting a higher price for their currency, owners of the new FreeMark can thus expect a stable price, but **more of it** for their early-adopter initiative. In fact the very earliest buyers of the FreeMark also receive a further incentive of equity in Worldfree Software Corporation, which over time we expect will become much more valuable than the currency they get with their initial investment. This is because part of the money that would normally back the early FreeMarks sold must be used to create the Worldfree Network. Eventually we expect millions of products and services of all sorts, from all over the world, to be bought and sold with FreeMark on the Worldfree Network.

The FreeMark will initially sold in a Pre-sale and an ICO, and subsequently sold to expand the money supply, with 90% of the revenue generated from currency sales put into a managed fund that backs the currency (except in the early stage of establishing the currency, when 65% of funds are invested in a fund, all which is explained to accredited investors). This fund produces a return that is shared amongst the currency's owners and Worldfree. In time, it will rebuild the currency back to 100% backing.

How to Fully Back the FreeMark

To create a genuine currency with 100% backing is an achievement—it is not easy. Worldfree's method begins by using the already existing method of selling the currency through an initial coin offering, using part of the funds raised to establish the currency and its Digital Prerogative, then using the rest of the funds to back the currency.

Yet this would provide the currency with less than full-backing. If, however, the funds are invested and adequate returns are realized over a time period, then the currency can return to 100% backing. This is an investment strategy that could be carried out, recognizing the nature of risk and reward and the time value of money, and working within the regulatory environment.

Furthermore, if transaction fees, small in comparison with today's transactions, are incorporated into the Digital Prerogative, then there is another way to not only restore and maintain 100% backing, but to earn savers in the currency income on their savings.

Worldfree has a patent pending on its novel method of providing the backing and additional revenue for savers by letting them earn royalties in proportion to their holdings as the money supply expands with secondary offerings, and as the money supply expands in the course of daily business (as people buy and sell the currency, if there are more buyers than sellers, then the money supply is increasing).

In this way, it is possible to incentivise early adopters to buy and use the currency. Importantly, it establishes a different relationship between money supply expansion and the value of a currency. **Instead of savers suffering inflation, or currency devaluation when a currency supply increases, they will instead benefit**, and thus have a reason to encourage its use with their business associates, clients and other relations.

We use the income from selling the cryptocurrency FreeMark to establish a fund that is invested under legal standards to deliver a return that over time will restore the 10-15% of the initial currency used initially to set it up for use as a stable medium of exchange. Compare that to some other currencies, which create artificial scarcity through software, and thus spend billions in continuous use of electrical energy to maintain a currency that has no real-word backing. Novel, but novelty is not an advantage unless it is better.

Yet FreeMark owners benefit immensely from a stable currency. The FreeMark is designed and engineered to be a freely tradable currency for global transactions. So naturally, as a global currency, the question is does it have a limited supply? No, why should it—it has real backing with an asset. It does have an automatically-controlled supply, however, with a means of reducing the supply of FreeMarks, and a plan to increase them without adversely affecting the earlier buyers—in actuality a way to give the earlier buyers more FreeMarks the faster the currency grows. In between secondary coin offerings owners of FreeMarks will be compensated by the Atomic Central Bank. During secondary coin offerings, which Worldfree envisions will happen, existing coin owners will get a percentage of new coin offers while maintaining the value of the coin, and this is all explained next.

4 The Atomic Central Bank

Addressing a Really Big Problem

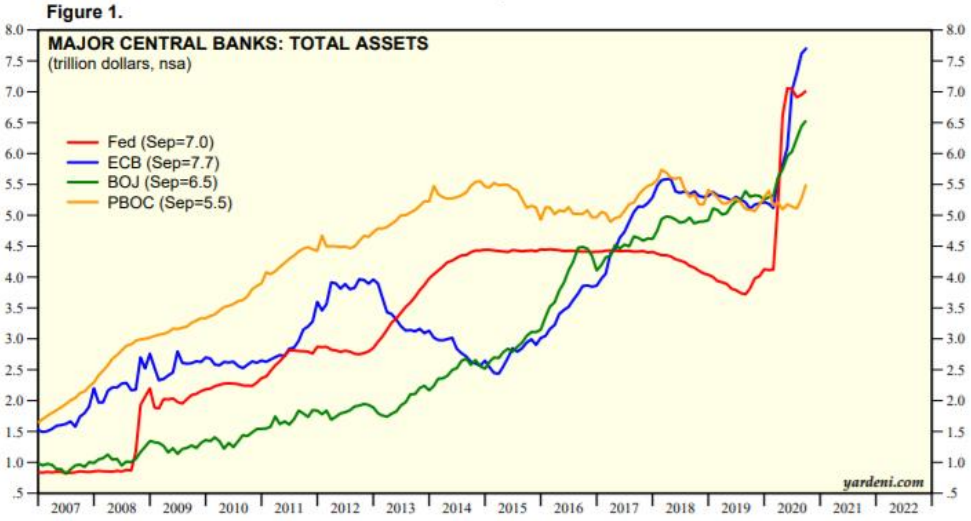
US Fed Chair Janet Yellen recently explained how they had built financial models of banking performance under potential financial shocks. She feels the private banking environment is much safer, and it may well be.

> ***"The system is much safer and much sounder."***
>
> ***Janet Yellen, Fed Chairman, November, 2017***

However, what she did not address was the impact central banks are having on the economy—the very real price we are all paying for the supposed stability of the private banks.

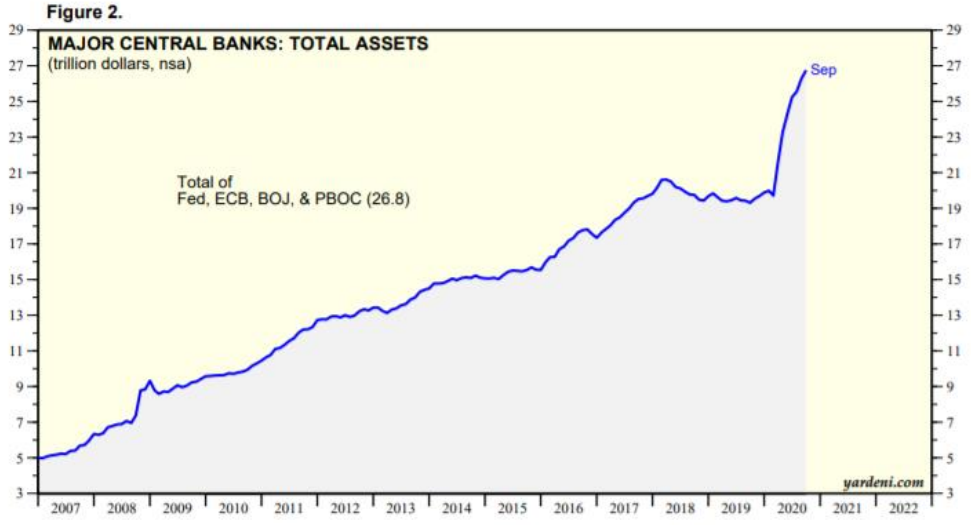
Consider the policy of central banks around the world to use Quantitative Easing (QE) as a response to the lending crisis of 2008 and COVID. Below are two recent charts showing the rise to **$27 trillion** in assets held by the four major central banks, with the Fed's contribution currently stable—maintained with new buying.

Figure 1.



Source: Haver Analytics.

Figure 2.



Source: Haver Analytics.

In spite of Yellen's pride in presumably newfound bank stability, they have only used a simple tool—let us call it the ***central bank hammer***: "print" (type in a computer) money and buy assets from banks in order to reduce their risk and increase their liquidity. No matter how else they put it, this is not rocket science. Third-graders could have come up with the same solution.

We should ask what this means in human terms, however, as hammers are not the best tool for every job, and solutions to crisis are rarely so easy and simple.

Consider what QE means—that it is the central banks purchasing a financial asset—one that pays a dividend. In other words, central banks have been nationalizing income-producing assets by printing, or creating money from nothing through a bank account to buy them.

Central banks are not just printing money in exchange for global assets, but nationalizing the revenue from the financial assets.

This has the effect of reducing global revenue. Why? Because the income from the assets is no longer earned by the people who used to own them—by the pension funds, the individual savings accounts into which they were invested by the banks, and by the businesses who placed their savings in income-generating financial assets, such as bonds and funds that invested in bonds, which have now sold them to the central banks.

At a historical 5% average rate, they are receiving about $1.3 trillion per year of interest on that $27 trillion in assets, which the private sector—the people—no longer receive. They have received payment for the assets, and then invested them on, with the central banks intention of pumping up spending by utilizing their savings. On a global GDP of about $81 trillion, that is only about 1.7% of a decline due to QE in global revenue, offset by the private sector's savings expenditures.

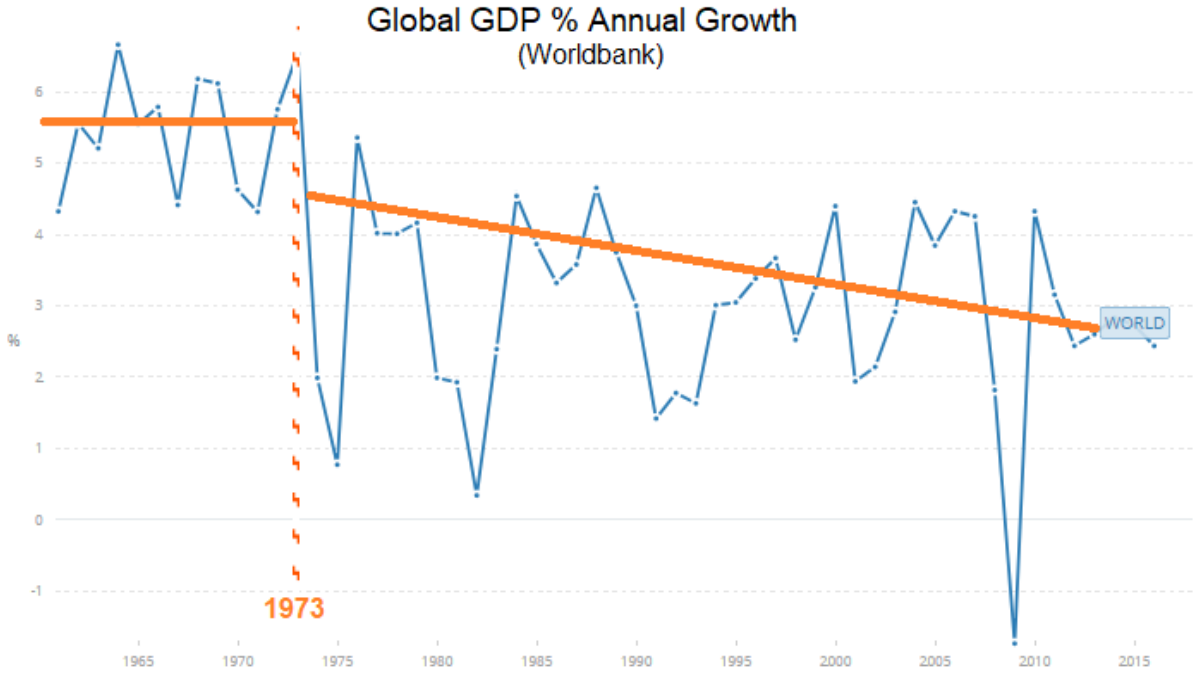
If that were the total cost of avoiding a worse calamity, now nearly 12 years ago, we could have a debate, and people would probably say it is time that we stopped paying for that. But $1.3 billion stripped annually from global private-sector economies is quite expensive, even if it causes people to spend their savings.

Yet it is not the complete cost. When central banks began to compete with private sector buyers to acquire these income-producing assets on the open markets, they drove up the prices, and hence drove down the yields on all the savings of the private sector participants who had to compete with the central banks. It is estimated that average bond yields were on the order of 5% prior to the financial crisis of 2008, and that now they are on the order of 2%, or a 3% drop. *All yields were affected* by the entrance of a massive, artificial buyer in the markets, so the effects were and continue to be felt around the world. In a difficult economy, investors may reduce risk by increasing their portfolio of fixed income assets, thus competition from central banks hit at a bad time and almost certainly reduced yields globally more than the extra they paid for the assets initially.

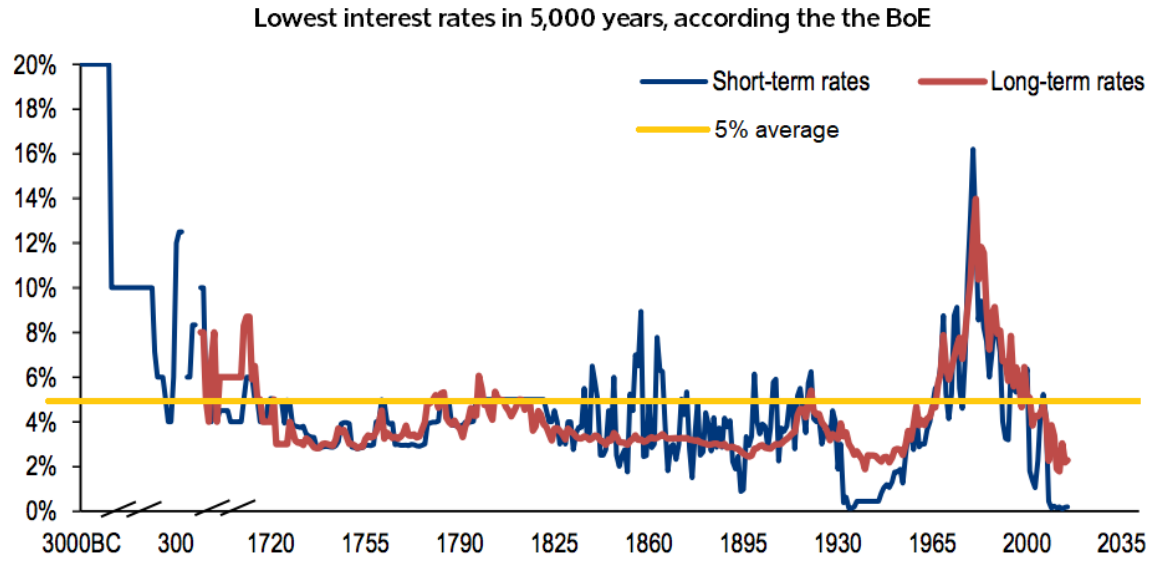
In a world market of about $246 trillion for debt thus far in 2019, according to the Institute of International Finance (IIF), the loss due to the continued purchase of debt instruments by central banks, driving the prices of bonds up, and thus their yields down, is approximately 3% * $246 trillion, or about $7.4 trillion per year. This is the effects of the central bank buying on the interest revenues.

That is a drop in global revenue of about 8.4% on $88 trillion in total. We might cut it in half or even a third for the sake of conservativism, but it is money that would have raised economic activity globally, but is no longer there, because central banks have driven down the return on money by competing for it with their central bank-directed, asset-nationalizing

policies. The trend, shown below, is not good, given the above asset buying continues. And it looks like it started when the gold standard ended, in 1973. That is a very interesting correlation.



Granted, we cannot know that the yields would have been 5% as they were before (curiously about equal to the GDP growth rate prior to 1973), had central banks not engaged in QE. We have to speculate, but historically, that is a reasonable assumption, especially in the last 100 years, as can be seen below.



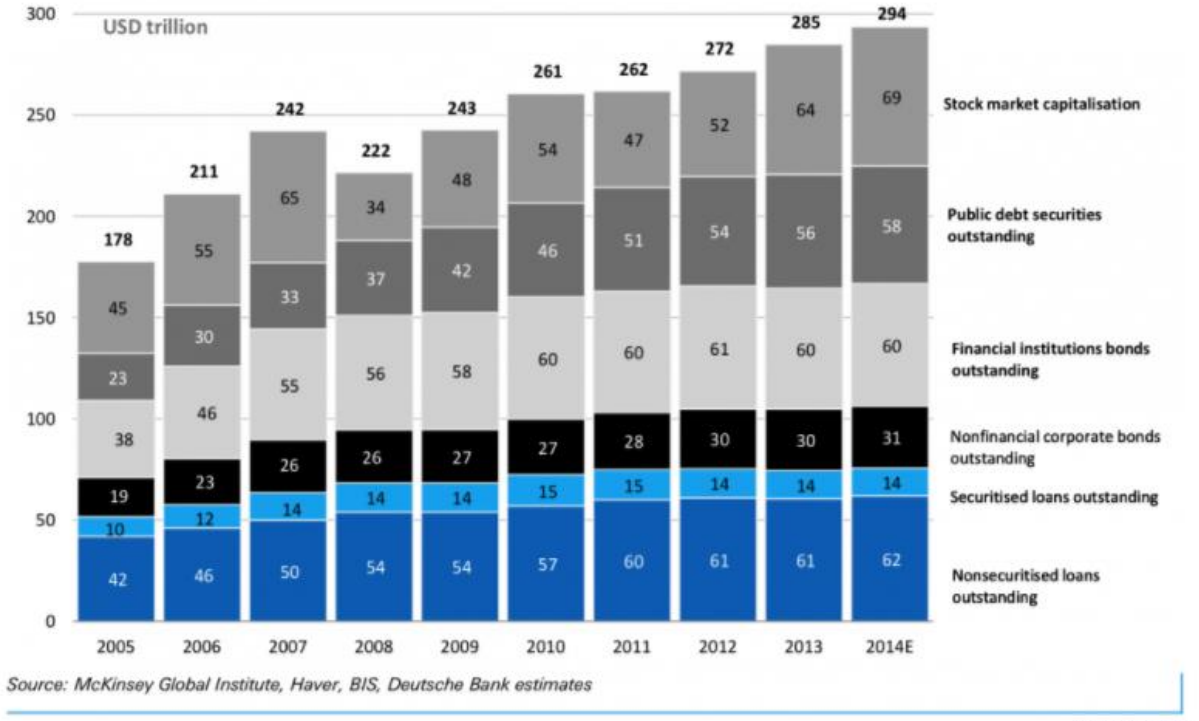
Sources: Bank of England, Global Financial Data, Homer and Sylla "A History of Interest Rates"
Note: the intervals on the x-axis change through time up to 1700. From 1700 onwards they are annual intervals.

Thus central bank policies are sapping the globe of fixed income revenue. Where before, businesses of all sizes would save their profits and derive additional revenue, increasing their chances of survival and thus economic sustainability, now they are all at greater risk of failure without that additional ~3% of interest rate earnings. There is slower growth because of less

revenue, which works opposite of the intended forcing of investment by making cash available in return for the securities.

The purpose of the QE has been to sustain banks and ward off a crisis. The banks have been required to hold more assets in relation to their capital, and thus the money has gone to satisfy the regulators mostly.

Figure 1: Stock of Global Financial Assets



If investors had sold their assets and invested into the economy, then there would be lower debt—the above chart shows debts have not substantially declined. But we do know that the other side of the equation—the income from the assets—has declined by ~3% to 2% from 5%—that is a 60% reduction in fixed income revenue, no matter how it is calculated.

Timing is everything—investors all sold to the higher prices, and yet have no place for their money, driving up prices of assets everywhere, reducing yields generally, as the evidence makes clear. Stock market equities clearly have benefited from the injection of cash, but more as a response to price competition than underlying value improvement, which is generally acknowledged.

Ultimately, this central bank hammer has resulted in only lower fixed income revenue on a global basis. Clearly, as the above chart shows, there has been slight growth in debt in the private sector (the first 4 squares going upwards), but at a slower pace than previously, when considered from the other side—the savers and investors in fixed income securities. The theory was that when yields go down, borrowing becomes cheaper which should stimulate business investment. But there has not been a substantial increase in borrowing, other than by governments, from $37 trillion to $58, or about 57%. They are taking over the economies.

Well, this kind of dilemma is what everyone is used to—for decades we have heard the arguments of massive economies being bashed about with central bank hammers, from one edge of an abyss to another. People study it with the expectation of seeing the same economic seesawing in the future.

The thing about slowing economic growth is that young people do not have assets already. Economists of the central-planning paradigm can proclaim that we are headed for slower growth globally, without any causal explanation, but they are not likely going to appease those in poverty still.

Central banks are aware of digital currencies, and their debated and slow-to-implement solution is naturally to peg a currency to a measure of inflation, such as the Consumer Price Index (CPI). But that is a very bad idea—it is pegging a currency to itself, essentially, decreasing its value as it decreases in value—establishing an exponential curve into the value of currency, while they let the government come up with the numbers.

Who knows how long it would take before central banks begin to introduce currencies, if they ever will. But clearly there is a place for a commodity-backed digital currency that is as sound as bedrock, in a global marketplace the economic liberty of which can be maintained. It is not about shielding "drug lords, dictators and terrorism". Worldfree will do KYC/AML too so that we are not tainting our business model and network of business members. The world needs an alternative market environment that operates independently of the consensus political oligarchy.

The central banks of today are politicized organizations, operating under the influence of consensus-based bodies. Many people seem to recognize this, but they do not understand the cause of it. They think that "capitalism" is to blame, and they call for more consensus—more gasoline for the fire. It is consensus that facilitates the corruption by providing a conduit through which funds can flow to candidates, power and favours-obtained. With institutionalised sortition, governments would not operate in this corrupt manner.

Worldfree has a more sophisticated and innovative solution to this predicament. We are automating central bank functionality with a "distributed" central bank. Clearly a contradiction in terms, Worldfree calls it the Atomic Central Bank, because the system itself resides and operates on each node of the financial network, and it implements policies based on an alternative to the prevailing central-planning paradigm in economics, called the Atomic Theory of Economics, and as it follows other historic trajectories, we assert it as an emerging science (discuss later in chapter 8, The Free Market Institution).

It is automatic as the primary market-maker for the currency. Because the Atomic Central Bank sells FreeMarks at a fixed price, and buys them at the same price, to any degree, there is stability in the currency.

There is also liquidity, as the bank follows Digital Prerogative in its buying and selling—as many FreeMark can be bought as some party wants, of course after KYC/AML formalities, and the Atomic Central Bank does something special for existing FreeMark owners when the money supply expands.

They are paid more FreeMarks. A percentage of the FreeMarks sold is paid to the owners in proportion to their savings in FreeMarks. This means that instead of suffering a decline in value with money supply expansion, as the prevailing fiat system dictates, Worldfree's approach provides an increase in value by increasing the number of FreeMarks held by each owner.

This of course is a further increase in the money supply, which must be met with additional asset backing. But that is why the Atomic Central Bank charges transaction fees, at a very low percentage, but facilitating a stable economic environment where people can do business, savers can be confident in their interest rates, and low-cost loans can be utilized in order to serve the business environment in the Worldfree Network. The percentage of monetary backing

is made explicit to the users of the system, and functionally maintained by Digital Prerogative through the Atomic Central Bank.

The Atomic Central Bank systematically seeks 100% backing, yet the money supply is fully liquid. Secondary offerings of the currency will occur to increase the size and use of the network, and owners of FreeMark will also receive additional FreeMarks for this money supply expansion, in the standard, automated way.

Worldfree uses responsible central financial planning, unlike the current central bank policies shown above, but in a distributed way that takes advantage of Digital Prerogative.

Because Worldfree's solution is sound, we have the opportunity to take advantage of the reasonableness of exposing the asset-backing base to minor variations, so that other incomes can be produced in order to deliver more value for our user base, and offer increased liquidity itself to the Worldfree community. Few other currencies are 100% asset-backed, and no major ones, so our plan is conservative and thoroughly practical.

If we do not think we can advance our circumstances and quality of life, then human beings will not even venture to invent—it would not make sense. If we assume that it is not possible to improve our method of governance, for instance, then we are quitting and will remain stunted. Cryptocurrencies are an innovative attempt to regain control of and establish a better foundation for our financial world.

Central banks are one aspect of our world that we have come to regard as part of our financial landscape. Mechanisms of the US Federal Reserve, for example, arose as a response to financial difficulties on a global scale. The idea behind the original establishment the Fed was to even out wild swings in the economy.

But it has not worked, obviously, as they are still occurring.

Worldfree asserts its right in the digital world to build and test an alternative system of distributed "central" banking, first as a prototype, but since its design *is* better, later as an alternative that people can choose to utilize on a commercial scale—providing a consent-based foundation for an alternative functionality in a small range of governance. This is within the scope of the human right of self-governance.

Worldfree's central bank is a distributed model, and as we become successful, other alternatives will evolve to provide general central banking solutions that the market place can select from, giving them greater choice between competing offerings, and thus improving the performance of this important monetary functionality overall.

Keeping Backing with Digital Prerogative

In order to ensure that the Atomic Central Bank can achieve and maintain 100% backing while still paying royalties and engaging in secondary offerings of the FreeMark, the outflows and the inflows have to be itemized and an algorithm designed that is stable and always recovering the backing, which is the system priority. We first identify the outflows:

1. Royalties on money supply expansion
2. Payments to miners
3. Transaction fee payments
4. Declines in asset prices, and investment losses
5. Exchange rate losses as other currencies inflate
6. Withdrawals

To counteract these outflows, we have to develop inflows of revenue to the Atomic Central Bank, recognizing that these inflows to the Atomic Central Bank will be in conflict with the payments to the Worldfree Network members.

1. Worldfree Network Transaction fees
2. Exchange rate spread
3. Revenue from trading assets and investments
4. Increases in asset prices
5. Loan fees
6. Insurance fees
7. Deposits into the currency

The best way to think of the project is that the Atomic Central Bank is similar to a bank that is run not for its shareholders, but for its members, and that it is distributed.

With success, Worldfree Network members will enjoy an inflation-proof store of value. Every time their own currency inflates, the FreeMark will be worth more in the other currency. For example, if the price of wheat (5% of the FreeMark) goes from $4/bushel to $5, that 20% increase will be reflected in a FreeMark being worth 5%*20% more, or 1% more. If this happened after the first year, all other things being equal, the FreeMark would be worth $1.01, so that when a member of the Worldfree Network took their money out of the Worldfree Network they would have $1.01, rather than $1.00, receiving that 1% in addition to their original principle.

Thus this serves as a means of establishing priorities amongst the competing obligations that will be established by Digital Prerogative within the Atomic Central Bank. The most important priority is to regain and maintain 100% backing. Aside from royalties from money supply increases, and Worldfree's fee, because Worldfree is not a slave to its members, the 100%-backing receives all the revenue from the Atomic Central Bank until that backing is attained. Patterns of behaviour of the Atomic Central Bank under Digital Prerogative are altered in order to accomplish this set of priorities, meaning lending may increase or decrease, or additional secondary offerings undertaken. For instance, if the backing percentage at some point in time is 85%, and a secondary offering occurs at a higher level of backing, then the backing percentage improves.

The Atomic Central Bank Works for You Automatically

The benefit is of course that people doing global business do not have to worry about governments inflating their currencies, so long as they are using the FreeMark as a medium of exchange. Being highly-asset backed, insured and audited provides you with security a means of earning money on your money, avoiding inflation the rest of the world must endure, and benefiting from the other values that the Worldfree Network provides to help you improve your business.

It is important to note that our pursuit of 100% transparent backing does not imply that there is no risk on the Worldfree Network. Because assets must be invested in order to earn a reward, there must be a concomitant risk, and there is also a risk that assets might not be sold in time for immediate redemption calls.

Worldfree will endeavour to produce a business community where any credible person or organization can get low cost loans and interest on their savings, as well as earning royalties as the network expands. Worldfree is a for-profit enterprise, and all fees that accrue to the Company will be made transparent to Worldfree Network members. Our existence is to help

our members do more business, make more money, and be more successful and financially sustainable over the long-term. But we do not do that as sacrificial victims.

Let us take one example. A home owner is selling his house to a buyer. They are negotiating the price. The owner says $300,000; the buyer says, no, $299,000. The owner is adamant, and the buyer is also adamant. In the end, they do not do the deal because of the 0.33% spread on their price.

Is that a practical example? The answer is no. People are rarely able to discern 1% value differences, so how can they determine price differences so accurately? Again, the crypto-community has got this wrong. People are not concerned about fee-less transactions, but they are concerned about the ethical issue of knowing what those fees are.

Recently it was disclosed that a 0.5% fee was coded into the open source Bitcoin Gold token. They did not make this explicit. Some writers saw that as unethical, while others pretended the users should look up the terms in the code—a completely irrational and impractical expectation—itself bordering on fraud. If the crypto-community is hell-bent on working for free, as slaves, and many of them are, then anyone who refuses to be a slave is a public enemy. So people then presume that covert behaviour is more legitimate than acknowledging the obvious which is that we all need to be compensated for our efforts if they result in values being provided for others. We only need to be honest in our dealings, not self-sacrificial. Otherwise there is misrepresentation for gain, which is contrary to principles of human liberty.

In summary, Worldfree brings to the central banking challenge a system that can respond in an immediate, transparent, consent-based, rational and smooth manner to financial shocks of the type that occur in financial systems. The *distributed* Atomic Central Bank functions *automatically* on all nodes of the Worldfree Network to accomplish five basic purposes:

1. Maintain the asset backing of the FreeMark by investing it prudently for a return
2. Provide low cost loans for the network in collaboration with its members
3. Serve as an automatic, Digital Prerogative-controlled market maker to buy and sell FreeMarks in exchange for other currencies, thus keep the currency pegged to a basket of commodities
4. Generate revenue for FreeMark owners via Digital Prerogative-collected fees for transactions, which it distributes between the owners of FreeMarks and Worldfree
5. Allocate royalties in FreeMarks via Digital Prerogative to savers as the FreeMark money supply expands in secondary offerings and through daily exchanges.

The first two require human intervention, thus Worldfree shares in the transaction fees to cover our costs. The world is not virtual—all physical assets require special attention, verification and handling.

In the next section we discuss the role of miners in the Worldfree Network, and how they contribute to the growth and substance of the money supply, as well as to the task of validating transactions so that the Worldfree economy operates in a rational, secure and vibrant way.

5 Mining

Mining FreeMarks for Purpose and Profit

Mining costs for Bitcoin are presently about 290kWh per transaction, and just to mine one Bitcoin requires approximately 13,000kWh. On an annual basis, nearly 30 TWhs are consumed by Bitcoin miners, which at $0.10/kWh, is about $3 billion just for electricity.

That energy is predominantly used to solve a cryptographic math problem—to discover numbers that fulfil a hashing algorithm, and thus serves no practical purpose, and has no inherent value. This proof-of-work technology may limit supply, but clearly that is not the only way to maintain a currency's value.

Today's Bitcoin miners lower their risks by joining pools, and thus must pay a fee. To mine on their own, they only get paid when they mine a whole block in a competition. As more miners get involved with more expensive hardware, it gets more difficult and riskier to mine, as a miner must beat the other miners to the solution to the hashing problem, or lose all his expenditures in the process of trying.

On the other hand, Worldfree's mining opportunity is much better, being used to find and parse text in internet websites, consuming less power (less than 70 Watts) and using a state-of-the art, Intel i7 mini PC-system incorporating hardware-secure, Worldfree Mining Software, and includes:

Intel i7 7700 Kaby Lake	32GB RAM	500GB SSD	4TB hard drive
Windows 10 professional	NVIDIA GTX 1050 Ti 4GB	Fanless	

Our mining paradigm is regulated by the Digital Prerogative as well. It will be based upon a formula established in audited code spread throughout the distributed network software. The Digital Prerogative controls the:

1. **Mining capacity**, which is limited to the amount of interest royalties paid to the Worldfree Network community
2. **Royalties**, which are correlated to the growth of the money supply sold to the marketplace through daily exchange and through secondary offerings
3. **Number of additional miners**, which is controlled amount of royalties so that a minimum of f$1,000 per month is produced when performance measures reasonably attained by the Worldfree PC-standard running 24-hours a day through the month.

The f$1,000 per month will increase over time and should be on the order of f$2,400 by the end of year 4, if we achieve an annual money supply growth rate of 40%. Higher growth rates will produce more miners but deliver still higher revenue.

Worldfree mining is different. The Digital Prerogative pegs the value of the FreeMark to a price set by a fixed-quantity basket of 20 hard and soft commodities, which fluctuate on open markets. The miners are paid on performance, just like for other cryptocurrencies, yet they are not solving hash problems, but instead searching.

Worldfree miners use an algorithm to turn sentences into ideas that Worldfree software can reason from, using a new theory of deduction. This is a very cool functionality that members of the community will find a great service, and which will encourage others to join the network, expanding it and thus contributing to the profitability of the network.

There are some risks in Worldfree mining, for instance, that the rewards depend upon the success of the Worldfree Network, and how many people trade with the FreeMark. Since the FreeMark is a stable currency that pays royalties, it is a better store of money for most people. For instance, if you have monthly average balance of f$1,000 you earn the same royalty rate as if you have f$100,000, or f$100. It is automatically paid to the savers, who get a proportion of the amount available over the network according to their FreeMark ownership.

A person can buy up to 10 Worldfree Miner Licenses. They are f$3,000 each, and include the Worldfree computer described above, with all relevant software and instructions. The Worldfree Miner License also provides ownership of f$3,000 in FreeMark when the system is live, after the ICO, in return for taking a risk by helping us establish the Worldfree Network and FreeMark.

Thus the opportunities provided by an investment in a Worldfree Miner License are:

- A Worldfree Miners PC, designed to be worth a comparable system retailing at $3000
- f$3,000 in FreeMark
- f$1,000 per month in FreeMark when mining begins in the first quarter of 2020, and possibly much more over time if the growth rate in the money supply is high
- The ability to sell the Worldfree Miners License to anyone, subject to normal KYC/AML checks.

The idea is that over time, mining FreeMark will be a very lucrative opportunity, which earns you FreeMark that can be spent for goods and services or exchanged on the Worldfree Network into other currencies, or spent through a Worldfree debit or prepaid card. In return, the miners provide the Worldfree Network with current search knowledge, so that fast answers to direct questions as well as sophisticated, knowledge-based problem solving are possible for all Worldfree Network users. In addition, the miners are paid to mine the coins that provide the royalties for the savings of all the Worldfree FreeMark owners.

We have chosen to standardize the hardware so that 1,000 Miners provide more than 5 Petabytes of search engine storage, so that we can compete as a search technology with other giants, at a fraction of the setup cost. The opportunity of a miner is a good one, and thus it is better to have standardized hardware across the network so that performance measures are accurate and everyone is paid justly.

In this way we hope to provide a substantial alternative search source over the next year, as our natural language reasoning comes online. But searching is only one function of our offer, and only a minor one. The other aspects of the Worldfree Network are discussed below in chapter 7, The Worldfree Network.

Again, since there is a limit to how many licenses can be operated on the system constrained by the amount of royalties that are paid, and how much searching that is offered by the Atomic Central Bank, each owner of a Worldfree Miners Licence has the right to sell the license to others, which could realize a significant upside in this limited supply.

6 Worldfree Natural Language Reasoning

The next computer revolution, after deep learning and cryptocurrencies will be reasoning from natural language, also called NLR. That does not mean that programmers will write coding that solves every possible question that people can ask, like Google, Amazon and Apple do today. Is there a programmer in your head writing static code in a programming language that is then run through a machine compiler to produce object code so that it can be launched in your cerebral cortex? No—no one programs your brain, or at least should not be.

Nor does it mean that teams of corporate specialists will spend months optimizing sentence structures in documents in order to answer questions from them, as do IBM and thousands of start-ups.

NLR means a computer understands the meaning of words, just as you do, and can think and reason from them. It does not require another person between you and the computer to figure out how to handle a new and different problem.

The technology behind Worldfree's NLR was developed over more than 20 years, beginning in the 1980s, and involved the discovery of a science underlying the field of epistemology (theory of knowledge) that was then demonstrated in software used by many G200 companies.

Worldfree's founder first recognized while working on his A.I. thesis in engineering graduate school at Cornell that without a science of epistemology, we could never hope to solve the AI challenge. Just as without a science of physics, we would not have all the wonderful technologies of today, we cannot expect substantial *application* in technology from a pre-science field.

After writing a book and doing a full historical and philosophical comparison with the history of Western philosophy, he returned to his original goals and built a software system using the new theories of deduction (reasoning), lexicology (meaning), and grammar. The company grew to a few dozen people, had clients such as P&G, Litton Aerospace, and Baxter Healthcare, and many thousands of users for its 3 innovative applications, *KnowAll*, *SeeAll*, and *CatchAll*.

KnowAll was selected as a Finalist for Best of Comdex, in the Personal Productivity category, and received reasonably positive reviews. Primarily, it was thought that it required too much computing power, and did not give answers often enough. The Company had attained, when it introduced *KnowAll* on the market, 20% parsing (ability to identify parts of speech), and 30% internally through its R&D efforts, which IDC said placed the technology "18 months to 2 years ahead of the competition".

But that was only for **NLP**—natural language processing—the only technology IDC understood at the time. Worldfree had already achieved two important additional technologies in its product called **NLU** (natural language understanding), which used the new lexicological theory (theory of definitions), as well as **NLR** (natural language reasoning), using the new theory of deduction.

NLP is the *perception* part of the language problem, NLU the *comprehension*, and NLR the ability to *reason* from language that gives it its power to solve real-world problems, and makes humans more intelligent than the rest of the animals (presumably).

It should have been no surprise that after their CEO was contacted a team of 3 people arrived from IBM, who evaluated the company and team over a 2-day period, and offered to acquire the firm. However, the business decision was made to not sell.

Now, with advances in parsing technology from new developments in deep learning, it is an opportunity to reintroduce the technology into the marketplace and go from 30% to 90% parsing, with a concomitant improvement in delivering direct answers and solving more complicated knowledge problems.

"Right now, Natural Language Processing is kind of sad because we are just at the surface."

Jonathan Mugan, PhD. CEO DeepGrammar, September 25, 2017

These two quotes compare our technology from many years ago, to what is available today. Our natural language reasoning technology then was many years ahead of its time, as is our cryptocurrency technology.

"In my opinion, Worldfree's technology is unique and a genuine advance in the Artificial Intelligence field. Worldfree technology allows computers to reason from natural language in real time..."

John J. Rosati, UCLA Cognitive Science Advisory Council, 2001

Venture Partner with Triangle Venture Capital Group, DE

Today, AI is broadly considered as Machine Learning, because it is viewed through the advances in machine learning, but not understood by the field is epistemological science, which was validated by its application in commercial software long ago.

The prevailing theories in the field are predicate calculus-based logical theory, and numerical or Bayesian analysis for understanding syntax. The former is not science—there is an error at the basis of the Bertrand Russell and A.N. Whitehead paradigm, in an invalid assumption underlying the implicative conditional, which Worldfree's founder recognized in the early 1980s and solved the problem in the 1990s in a paper called the *Unwarranted Assumption Underlying Modal Logic*. Thus the theories taught today are useless, and that is why it is important that the new advances be returned to the marketplace where they can be benefited from. From *Wired* magazine in December, 2016:

"AI is basically the intelligence –how we make machines intelligent, while machine learning is the implementation of computational methods that support it. The way I think of it is: AI is the science and machine learning is the algorithms that make the machines smarter.

"So the enabler for AI is machine learning".

Nidhi Chappell, head of machine learning for Intel.

That is different from Worldfree's perspective, which is that machine learning helps us with pattern recognition, but that is all. Instead, we approach the science of AI from a different, more classical perspective, where human reasoning consists of 3 primary *mental methods*:

- deduction
- induction (abduction is a method that relies upon the others, a meta-method)
- validation

Each of these mental methods is an intellectual behaviour that uses concepts as their elements of processing.

They are idealised, and thus can be performed more effectively because of the new epistemological paradigm. We do not think as well as we could think with a better understanding of these processes. Computers for this reason will be able to think more capably than humans, in their present generally less-educated state (because the knowledge is new and not disseminated widely).

For instance, deduction is a process that occurs between concepts. This is modelled with the new *Set Theory of Concepts*, which explains the relationship between word or concept symbols and their referents, in a precise way that is made manifest through a new Lexicological theory, or theory of definitions. The Set Theory of Concepts asserts that:

> ***"...the primary purpose of a word's definition is to delimit the set of referents which it symbolizes. An additional purpose of definitions is to establish a shared symbolism in order to facilitate communication."***

This theory drove the Lexicological theory's derivation. Worldfree has implemented the new Lexicological theory in software, and that and the new *Theory of Deduction* were the basis of *KnowAll*, which was sold to many G200 firms in a technology IBM offered to acquire.

The Worldfree theory was derived through an attempt to solve the classical challenge of epistemology, which is *how do we distinguish knowledge from opinion*. This is a controversial issue, as it presumes there is knowledge that holds for all people—something many people do not want to hold for the human fields, because of political bias.

For instance, a new concept that holds for all people, showing the science of epistemology, is

> ***"All concepts have a spatial and a temporal scope."***

This is a principle of knowledge. It can be applied in many ways, including in AI. So if someone were to ask is epistemology a science, now you can say "Yes".

There are two other theories that will in the future be applied explicitly in Worldfree software. The first is the *Theory of Validation*, which has already demonstrated its efficacy as the drive for the development of the *General Form of a Concept*, which is the symbolic representation used as the foundation for the data structures in *KnowAll*. The other theory is the *Theory of Induction*, which provides a foundation for all concept formation, in other words, the basis for a science of innovation.

This latter theory provides a means through which future Worldfree system will be able to create entirely new understandings. Worldfree uses the machine learning advances to improve its pattern recognition from 30% to 90%, so that it can apply the idealized mental methods on more knowledge, 'comprehending' more of what it 'reads', answering more and deeper questions, helping Worldfree Network members to reason better and think more capably.

7 The Worldfree Network

Worldfree's long term plan is to create full-service digital financial services to back up an online marketplace where it is *better* to do business, interfaced through rational natural language. Worldfree's CEO grew up in the banking software industry working for the company his late father founded, and thus has broad experience in leading teams to design, develop and distribute large-scale natural language reasoning and financial software systems.

Central to Worldfree's vision is utilizing anonymity to facilitate access to market participants, using a patent-pending system and method, and thus improving market penetration for sellers and making work easier for professional and other buyers. Clients benefit by getting:

1. Fast transaction times (seconds) no matter how large the network
2. Low interest loans through the Atomic Central Bank
3. Interest through royalties on savings and from mining/processing transactions
4. Fast Exchange rate conversions using a unique approach
5. Prepaid or debit card attached to Worldfree Network account for high-speed Point of Sale functionality
6. Increasing assets from inflation (money supply increase) through the Atomic Central Bank
7. Easier, faster and less costly access to buyers and products

The Worldfree Network provides rational natural language interface to the following functions:

1. Trading in goods and services
2. Trading financial instruments for low transaction fees
3. Trading in currencies, providing another form of arbitrage
4. Distribution network for information products

It is important to distinguish between the virtual world and the physical one. In finance, we tie "virtual" assets, like documents and currencies, to physical assets. Maintaining those ties is not always easy in a world where people want to break them—also known as theft, or can occur in disagreements or upon contractual arrangement.

For example, if a vehicles dealer sells someone an automobile on credit, if the buyer does not pay, the dealer must have legal and practical recourse for recovering the vehicle. Otherwise people would steal all the dealer's vehicles, destroying his or her business, eliminating the income of its employees, as well as destroying the economy in general.

That is unlawful and importantly, unethical. Establishing the law is easy enough, but people choose their ethical codes, or accept them, often without understanding it. Thus there is more to the Worldfree Way than designs and coding. There is a group of principles behind Worldfree, which are designed around the interests of value creators and honest traders.

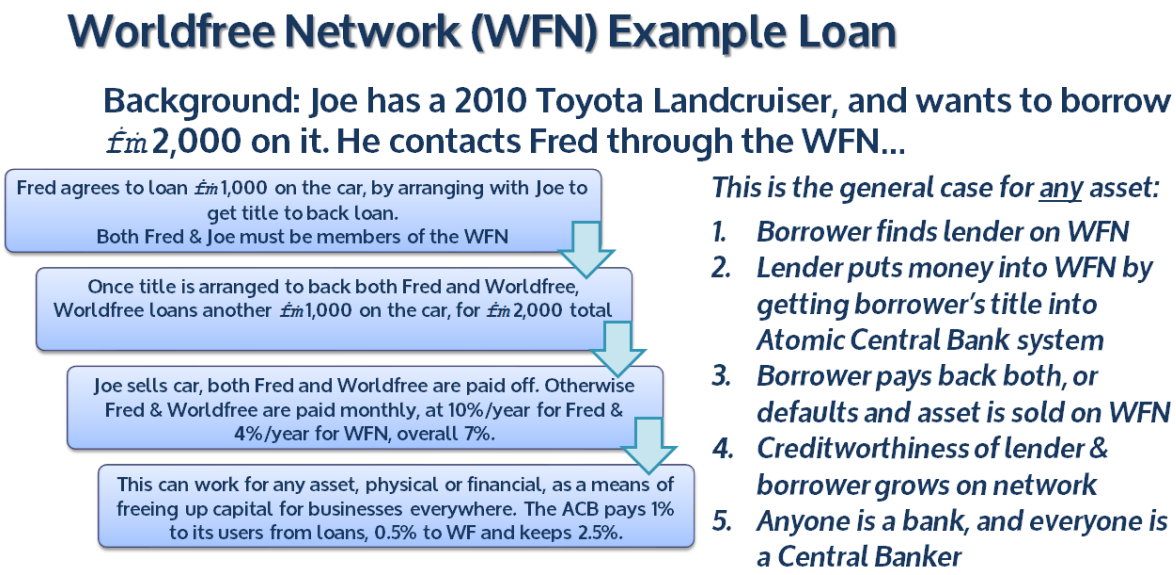
Worldfree has a pro-business ethical standard, and exists to improve the lives and success of its members, while earning a return for its owners and investors.

Fundamentally, when the Atomic Central Bank grants a loan, the Worldfree Network is drawing against the asset backing. Because Worldfree members know the backing is the basis of the revenues or interest they receive on their savings, naturally they want fees charged for the loan to exceed loan costs and write-offs. Everyone does not have to learn the banking business, but that is its essence. On the Worldfree Network, as members will discover, everyone can be a lender acting in collaboration with the Atomic Central Bank.

Helping Grow the Global Business Community

Again, Worldfree's Atomic Central Bank has the priority of attaining and maintaining 100% asset backing of its money supply by making intelligent investments with the assets, both in the global community, and the global Worldfree Network. Worldfree will invest in Worldfree Network individual members and companies using the proceeds of ICO and secondary coin offerings on a case by case basis.

In addition, the power of the Atomic Central Bank might be understood better by the following example of members involved in a loan:



The Atomic Central Bank loans money to its members, but only to people who have established business credentials through the Character Registry, discussed below. Co-lenders find potential clients, and can charge any interest rate they want, which is offset by the 4% rate Atomic Central Bank charges through Digital Prerogative.

This 2.5% of the 4% loan charge is paid to the Atomic Central Bank, which it uses to rise up to and maintain the 100% backing, while 1% is paid to the community of FreeMark holders, as another addition to member revenue. Worldfree has to be paid as well, as there are parts of the loan—the connection between the virtual world and the real one, that have to be verified. Again, we do not work for free, and should not be expected to, as we are not slaves.

If the 2.5% being paid to the Atomic Central Bank exceeds the 100% backing, then the Worldfree Network will get a windfall. In this way members can benefit by encouraging people not in the network to join for low cost loans and for just doing business on a global exchange that in general makes buying and selling things easier and more successful.

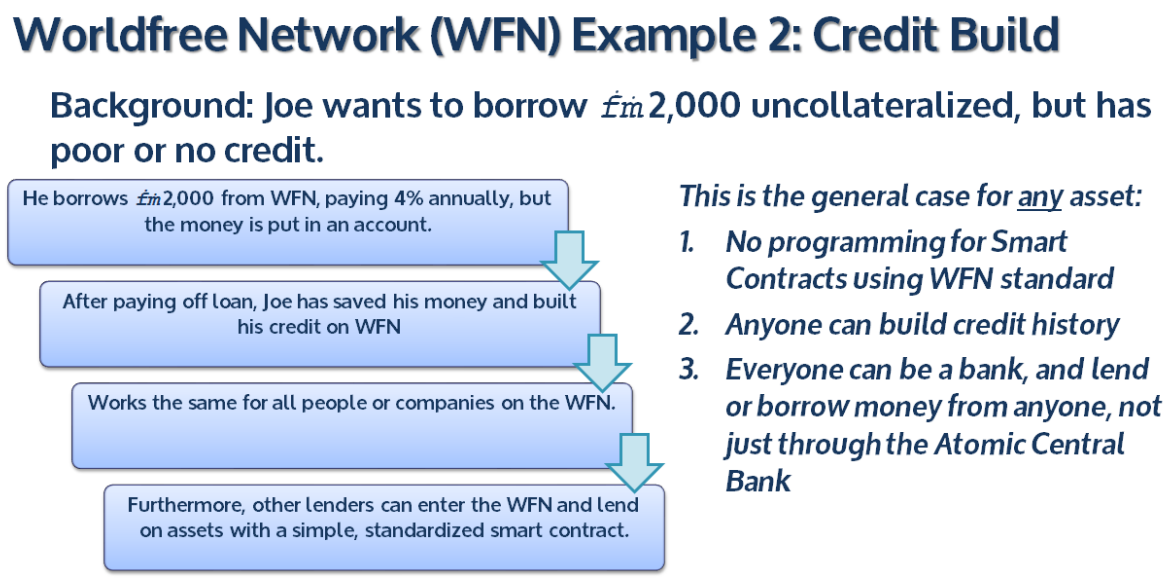
The Character Registry

The Character Registry is a more sophisticated method of establishing character than just connections as LinkedIn, for instance, provides. The Character Registry uses a distributed confirmation register that provides a record *that* business transactions have been done by a party. It provides three, consent-based numerical measures of the number of transactions, the value range, and the performance success.

They are consent-based because their use could limit social mobility, or prejudice deal terms. Suppose, for instance, someone sells 400 little, f$20 items, builds credibility in earnest, then tries to get a f$50k deal. Should they be denied the right to cloak their transactions, so that they are allowed to rise to a level of performance and customer recognition that they pursue? Alternatively, must a person with a solid record of high-valued transactions risk being prejudiced against in future dealings?

Incumbents prefer experienced vendors, but that can unjustly stratify a marketplace. Although the Character Registry will not have details of transactions, it will confirm whether parties concluded their agreements and arrangements in agreed upon ways, yet will facilitate an appeal process as establishing and maintaining character is serious in the Worldfree Network.

Because new members of the Worldfree Network will not have Character Registry entrees there has to be a means of establishing credit system wide. For that, the Worldfree Network offers another type of transaction, as described below:



In this way, new people can come on board and establish themselves either by small and increasing purchases, or by "borrowing money" but paying the loan off before receiving it.

Distributed Asset Validation

We all want to move financial regulation to a distributed system. That is a great goal—it will lessen costs, give us all more security, and improve the business climate.

Having said that, are we to expect the idea to be achieved in reality? A mathematical or logical argument is a symbolic representation—it is not the reality itself. To turn a good idea into practical reality, a method has to be devised, tested, implemented and controlled.

Those things are not mathematical, although they should be handled by rational, competent people and their results *verifiable*.

There are many ways we verify things today. For instance, if you are going to buy a used automobile, and it is represented as in good running order, then you test-drive it. This is not a mathematical enterprise, but a practical one that accomplishes the end, if done by a person capable of assessing the vehicle's performance.

The point is that a software system is developed by people with real world problems, costs and issues. It also is not just a mathematical or logical problem. There are many practical people who do very well in productive enterprises, verifying, validating, and acting with integrity in the solving of important problems. Clearly not every aspect of a new, distributed digital solution is solvable purely in the digital world.

The better part of connecting the real world to the virtual is subject to vagaries, ambiguities, misinformation and trickery. That is life in a world without an ethical science. But these difficulties in verifying assets already have been dealt with by successful non-virtual, more centralized systems. Worldfree has experience in dealing with both worlds, and will be making an effective transition from the old way to the new, respecting the values, legal systems, and patterns of behaviour that have already proven themselves relatively effective, although in general more costly. That is a challenge Worldfree thinks it approach will solve.

Paying for What you Get is the Worldfree Way

There are two contrary meanings of the word "free". The first means 'liberty of action', while the second means 'access to without cost'. They are opposing because the second often reduces the first. By *forcing* things to have no cost, we can eliminate the incentive for their production. Force can be force of law, or Digital Prerogative, natural monopolistic practice, or social propensity.

We have less liberty of use when we undermine the motivation for others to create and deliver a good that might provide us with more liberty of action. Thus in once sense the idea that free is better is wrong. It is a general case that forcing something to be free reduces its availability, if human effort is required in its production. Forcefully fixing prices in Venezuela does not cause greater availability of goods, for example, or produce a wealthier society.

Yet modern society is currently enamoured with the something-for-nothing version of free. For people in ignorance and poverty, free goods are better, for they may not understand how else they might attain things of value that others enjoy. It is common that when so much is offered for free under force, then people cannot find a means of attaining wealth by delivering value in exchange—markets have been eliminated.

Consider open-source software. It is free, in general, to utilize without cost. So much is free that it is increasingly difficult for software engineers to make money building it. They may have to give software away and figure out ways to make money otherwise, for instance by entering the field of advertising, using software as a sales gimmick, when software production may be their preferred career choice.

We can look at the historic trajectory from paid-for software to free, and we find a political thread underlying the journey. Promoting free undermines the economic welfare of those who produce it, so we should start to question the approach, and the motives of those who promote it.

Consider that Google indexes and stores the entire public web on only a few thousand computers with large flash drives. Then they give this information away for free, information that they have not collected or organized, other than with a search tool. They, however, make

about $75 billion in revenues each year on the free use of information that everyone else is providing.

In addition, Google is giving young people and whole societies new to the possibilities of understanding, the idea that knowledge and effort should be given away for free. That is not right—they have been unwittingly, or not, **promoting mass slavery**—providing value and labour without reward. That is political, whether anyone wants to face it or not.

The users, in their drive to make money from their efforts, have to give things away for free to get, for example, contact information so that they might somehow get paid by selling something after all the free stuff runs out. They have to be slaves first, before they get their plate of slop, just as in ancient Egypt or the pre-civil war southern US states. Very few web owners can live off their efforts, but Google does quite nicely without paying them a penny.

Try to set up a website and put some new ideas, or better understanding of old ones, or try to offer a course in knowledge by teaching others—explaining things to them live over the internet, things they may very well be willing to pay for if the supply were constrained by rational people, rather than unconstrained by indoctrinated slaves. It is extremely difficult to get anyone to pay you when they can find slaves willing to serve humbly at their feet for nothing in return.

So, slave world, what is wrong? Consider a short story:

"I once drove passed a man walking down the side of the road, a couple of miles outside of a town in Latin America. It was normal in this region to offer rides so people could get out of the hot sun, if you had the room. So I slowed down, and asked the man if I could give him a ride.

"He said "How much?" I said, "Nothing, don't worry about it". He said "No thank you". So I thought about it a moment, and said, "How about one dollar?" He said "Fine", got in, paid me, and I gave him a ride into town. "

To the man, it was wrong to accept something for nothing. What is the basis for this older, less-common ethical value? Is it wrong to show respect for someone else's efforts, expenditures and time? Is it not more conscientious? Isn't it more admirable?

A something-for-nothing world cuts both ways. If you expect something in exchange for little, get ready for the same—nothing for something. And when you wake up in that future world and discover that every time you give your best, that you are just used and resented for doing more than others, and get nothing in return, then you will stop creating value. It works like a clock. That is why societies collapse into tyranny: because nothing else will motivate people but threat and forced labour, when they are not paid for their risk, their competence, or their ability to get things done.

Consider that Google has established its financial foundations by benefitting without cost, without even offering to pay. Would they not be more human, decent and showing their acceptance of responsibility for their own welfare if they paid for what they benefited from, or at least facilitated paying for it? Survival is so difficult for so many people, yet how many impoverished people are feeding the long tentacles of the Googlepus for nothing in return?

Internet 3.0

In order to re-establish the next version of a tool everyone needs, we must decide what that should be, from all the could-be's. Anyone can support any version they want, and may the

best version win. Worldfree is promoting a more responsible, human right and human effort-respecting version.

The Worldfree Internet 3.0 is a world where people get paid when other people use their website information. The Worldfree Network system, which itself is based upon a browser interface, will facilitate delivering incentives for better, more helpful, and higher quality websites by redesigning the web interface so that you can pay site owners easily, perhaps $0.01, more or less. Visiting 50 sites per day at $0.01 is about the cost of a cup of coffee every week. Maybe the market will settle on a couple of cents for sites people actually read. But as technology providers, we should be facilitating a rational, human right-respecting world.

What are the implications of Worldfree's version of Internet 3.0? With a well-presented, capably-prepared, interesting and original bit of information to help others, all those who benefit from it might pay you a monthly income. If you have 200,000 visitors per month, you could reasonably survive on €2,000 per month—you could in Mauritius or Greece. This is a better world, rather than Google getting all the money as the presumed source of the knowledge just because they access it for free.

Paying is the opportunity, not the problem. **The more we each pay, the more the world makes**. If our average salary is $500,000 per year, then there will be very little poverty. Fighting for poverty is the scam government-funded academics have been promoting. Governments want you weak and dependent, as did slave holders in the anti-bellum southern US. Slavery is big business—*that* is why people promote it.

If you want to be altruistic, pay more—but do not work for free—you devalue the currency of work.

Alternatively, do not be altruistic and earn more and respect others' right to do the same. That is the Worldfree way. It is still a consent-based world, but it restores property rights to those who provide value, so that they can be paid for their efforts rather than serving as a slave to Google and the public at large. Yet it still leaves visitors with a choice to benefit from the person who prepares a site by paying them, or not, as other people may still work for free.

It is time to restore "you get what you pay for" as part of society, as a means of rewarding performance, and thereby encouraging it.

You may gripe that you will not be able to web surf for free in this new world. But that does not follow; there are many ways a more responsible Internet 3.0 might function. The Worldfree model is nuanced, and will be unveiled in due course. And besides, if you are complaining about paying for benefit, then maybe you ought to raise your own standards of behaviour, and expectations of merit-based pay.

The establishment of the web as a place for adults, as well as children, is the aim. Children by their nature are dependents—they rarely can survive by their own efforts in a competitive world. We cannot design the web around the User Profile of a dependent child.

Consider the following quote from a website suggesting making a one-time charge in order to facilitate blockchain storage ad infinitum:

> ***"Charging $100 per GB will see us becoming revenue-positive by 2023 with a total shortfall of $3,248,796 that must be recovered through donations or grants.***

Are they being responsible and professional in their planning? They are starting out with a business model that produces a loss, and then they are going to ask for a handout to recover when they should be out of business.

Is this *adult behaviour?* They have not figured out a way to survive by offering value in free exchange. Their plan basically says they cannot earn their own keep, and stand on their own feet. Instead, they have planned to be dependent upon the good will of others, rather than upon their own efforts, trading for value under free consent with others who are willing to pay for that value. They are not willing to figure out how to provide a value that others might actually be willing to pay for.

If the thing they offer is not sustainable, then they are planning for failure. That they have not been taught more successful behaviour in a Western world awash in "educational" expenditures is a travesty.

That is why the Worldfree way is needed, and we all need to give some serious thought to societies that are teaching young people to plan for failure in public. We need an Internet 3.0 that respects individual rights *and* responsibilities, where the term "adult" has connotations other than sex.

It is easy to look around on git hub to see failed projects, development efforts that have come to nothing. People think working for free is benefiting the world, and therefore they are good to do it. But what if they are just making the world faster, not better? What if behind their innovative efforts no wealth is left behind. We have seen the massive degradation of value that is occurring in the central banking world, and we have to start to ask is all the innovation for nothing a big mistake?

We should not throw away the jewels of innovation by making them available for free—they should be feeding vibrant economies. The presumption that there will always be plenty of innovative new ideas and technologies to stimulate economies is likely false. We should in all haste turn them into wealth creation—wealth being outcome the transactions that we seek to process with Digital Prerogative.

For instance, Alice creates a table, and spends $100 doing it. She sells it to Bob for $400, and saves $100 after spending $200 on living. The $100 saved is the foundation of sustainability—it gives Alice the capacity to invent better tables, hire help building them, feed families and be prepared when the rains come in—when natural forces interject, upsetting the best of plans.

For generations of people raised on the idea that the $100 is fundamentally evil, perhaps it is time to rethink this error, and consider that Alice is more capable for earning it then a government for typing it into existence.

Worldfree is creating value by inventing and developing a stronger and more scalable foundation for cryptocurrencies, and a better environment for business. The FreeMark will strive to be backed by 100% assets through Digital Prerogative as we invest a large proportion of the proceeds in order to earn a return to replace funds spent developing the technologies that we hope millions of people will benefit from in the future.

8 The Free Market Institution

The Free Market Institution has four roles, the first of which is to ground the operation of the Atomic Central Bank and the Worldfree Network in an improved economic foundation, in an attempt to overcome the pre-science state of the field.

Secondly, the Free Market Institution seeks to promote an improved economic model *outside* the Worldfree Network society, challenging the prevailing failed central-planning economic paradigms and defending the economic and political foundations of intellectual property and property rights in general. IP rights especially are a basis for upward social mobility because they provide new entrants in marketplaces with the liberty to disclose their technologies so they can gain help and importantly time to implement build businesses around them, while in constant competition with incumbent firms.

Thirdly, the Free Market Institution benefits from its association with Worldfree in that it is able to establish and validate prototypical economic models, grounded in inductive principles derived from empirical evidence. The Free Market Institution thus benefits Worldfree Network members by bringing online the most advanced, trialled and tested economic stimulus models, to encourage the growth and success of the community.

"...it is virtually impossible for any person from a Western country to attain refugee status".

Swiss Refugee Council, October, 2017

Fourthly, the Free Market Institution will be there for (some) refugees—there are more today than at any time in human history. Individuals of Western societies, unbeknownst to most of them, *no longer have rights of political asylum*. They have limited rights to pay for citizenship in various countries at great cost, but if they find they are persecuted in their own states, they are not able to ask for political asylum in another state of the "safe states" list. For instance, a person in the US cannot apply for political asylum in the UK, or one in the EU if persecuted cannot apply for political asylum in Switzerland. They have covered one another's backsides to facilitate widespread violations of human rights, which we must assume is only beginning.

The Free Market Institution is funded as an endowment from the proceeds of money supply expansion events for the Worldfree Network, and thus earns its pay for advancing economic theory, and as new organization fulfilling the role of defending individual political liberty, long abandoned in the West except in PR campaigns to gullible voters.

The atomic approach to economics at the Free Market Institution basically follows the approach of other successful sciences, such as agronomy and chemistry. Instead of seeking macro-solutions, or holistic paradigms that attempt to solve large problems with debatable hypothesis, such as how to cause rain or turn iron ore into gold, these fields developed into sciences when individuals focused on ascertaining elemental knowledge.

For instance, Robert Boyle in the *Sceptical Chymist* presented in 1661 the hypothesis that "matter consisted of atoms and clusters of atoms in motion and that every phenomenon was the result of collisions of particles in motion". This was set in opposition in his book to the practice of the pre-science of alchemy to present arguments without first establishing their inductive origins by assessing perceptual evidence.

"The number of people that can reason well is much smaller than those that can reason badly. If reasoning were like hauling rocks, then several reasoners might be better than one. But reasoning isn't like hauling rocks; it's like racing, where a single, galloping Barbary steed easily outruns a hundred wagon-pulling horses."

Galileo

Likewise in agronomy, theorists advanced a science by studying the necessities of individual plants—the nutrients, water needs, and different farming techniques that facilitated their individual growth. This conceptual and method development became a science that could be applied to agricultural efforts in general.

The new science of agronomy, specifically grounded in this 'atomic paradigm', introduced new crops and animals from cross-pollinating and breeding, overcoming many plant and animal diseases and pests. Other influences contributed to the improvement of agriculture, such as a rise in the sophistication of machinery because of the advent of intellectual property rights introduced in the 17th century, or the modernization of transportation infrastructure.

Combined with mechanization of farms and advances in chemistry for fertilizers and insecticides, the productivity of farm land has immensely increased, doubling from 1900 to 1950, and increasing 3-4 times or more since then.

An example of pre-science, alchemical-like reasoning in economics would be Randian or Keynesian generalizations, valid to some extent, yet unconnected to any methodological analysis of fundamentals as we would find in an emerging science. Thus the field of economics lacks inductively well-grounded principles, with explication of their inductive origins and methods for assessing them. There may be many papers, but there is a dearth of principles.

In economics, the success of an individual is the focal point—what are the values and requirements of performance that facilitate independent, individual wealth formation? The idea being that if all individuals were successful, then economies would be more successful. This stands in opposition to the idea that governments can globally affect some policies which will have a significant effect on societies' wealth creation, which has demonstrated little consistent success (see Kevin Alexanderman: *OutThinking*).

The Worldfree global business network will promote new and different individual-based economic theories from empirically-derived, atomic-grounded economic inductive concepts. We use tools of the new theory of knowledge to validate the understandings with reference to perceptual evidence. For each idea this happens methodologically, until concepts are either discarded, or discovered to hold valid generally—that are indeed knowledge, not just opinion. Worldfree will hope to utilize the data generated by the network transactions to create new, valid principles so that members of the network have a *better* place to do business globally.

Governments are important, but their contribution is supposed to, and *should* be limited to specific roles. They *should* be regulated from entering any field of production or service delivery, so as not to have an enforced competitive advantage. Confiscating funds and offering

a good or service for free practically annihilates the competitive market for the value, undermining the incentive for maintaining its quality and improving it through innovation and market feedback. This reduces market opportunity and economic growth. Getting paid in advance leaves recipients of government performance without legal recourse, or alternative selection as they must pay for the government goods irrespective of whether they use them.

In addition, governments *should* be functioning mostly online, through automated systems, reducing overhead and shifting employment back to the private sector. Estonia is an example of a government currently embracing this approach. Finally, government leadership *should* be chosen through sortition, as the ancient Greeks did democracy, to stunt the influence of special interest in their decision-making. That, sadly is a tall order—whether the understanding of the role of random selection or sortition can be broadly-enough understood to provide the motivation for political changes remains to be seen. Presently, incumbent-consensus interests have become practically dictatorial—clearly the Free Market Institution can play a role in disseminating historical clarification and understanding of the possibility of better foundations for government than consensus that can be established peacefully.

On the opposite "*poll*", advocates of the various forms of anarchy, unwittingly or not, are fighting for the right to force themselves in other people's lives, as their violent history attests. Arguing against government, they become essentially political engineering nihilists, in wholesale denial that advancing our understanding of governance is possible, in an attempt to influence consensus powers, often through disruption or fear tactics.

Many people thus confuse governments using the consensus algorithm and failing, with governments in general. Anarchists want to erringly rid humanity of all governments, and thereby eliminate the *consent-based* foundation of rational political society. There must be an explicit jurisdiction in which to establish legal or ethical rules, otherwise they cannot practically be maintained. You can do business in the Worldfree Network, for instance, but you will still have to face people who do not respect human rights in your physical surroundings without good governance in your jurisdiction.

The false premise expressed by Winston Churchill, that "*democracy is the worst form of Government except all those other forms that have been tried from time to time*" is not accurate. Historian though he was, ***Churchill did not govern in a democracy as he was not chosen through sortition.*** He was operating in a time when the true nature of the Athenian democracy was not the prevailing understanding, as it is not presently today.

That is an interesting topic, and, however off-the-subject this discussion might appear, it is directly relevant to a new foundation for a cryptocurrency. It is the method of selection that limits self-interest in the original democracy, and returning to this ancient political technology works better to *regulate* self-interest in computer networks as well. The attempt to devise distributed digital currencies *is* a political endeavour, and has been motivated by desire for greater autonomy from modern consensus governments, under the misguided attempt to construct a consensus programming model.

To clarify, Worldfree is not against self-interest. People *should* choose an ethical code of value creation, and actively market and sell their products and services. People *should* find a partner they care for, and build a family and be happy. Opposing sides *should* fight to win and be the best, while working under law and respecting human rights—these are all manifestations of self-interest.

But in the design of a regulatory model, self-interest has to be identified as a force—a working force that has to be modelled and regulated so that outcomes are just, and consent-

based, but not grounded in the false hope of consensus. Utilizing random selection limits forceful imposition by limiting the ability to influence outcomes.

Hopefully, if the reader has made it through these various facets of a new paradigm, they can see a different path forward, one with the potential to turn economics into an applied science that can benefit people one at a time, in a network that *pays them* to be involved. If you have €500 today in cash, you earn nothing, and little if you keep it in a bank account, but on the Worldfree Network, you will earn money as the money supply grows to accommodate increasing business.

The idea that consensus-based governments can be trusted to produce digital currencies that are anything but manifestations of their leading faction's rule is not realistic. The suggestion to peg their currencies to inflation measures, as a reflection of reflections of dubious validity, like a hall of mirrors, ultimately means no backing at all. That would invariably produce a continuing of the decline in global GDP when most of the world needs higher growth, as there is still much poverty, and even developing economies have social mobility problems that only new economic activity can resolve.

For a central bank to actually produce a backed currency would require more gold than there exists (on the planet). Today's governments *generally* do not even keep their pensions allocation in a savings endowment (not usually a very large one in proportion to their receipts for that purpose). They spend it instead and rely upon tax revenues to make pensioners' payments, rather than earnings on the endowment.

With the advent of cryptocurrencies, the possibility arises of countless different designs of money. The opportunity for a person to choose *which* currency to use is developing—and because cryptocurrencies are infinitely variable manifestations of programming code, these currencies can compete with one another for the most innovative and functional as they seek the incentive of market penetration.

Worldfree steps into this void with a better understanding and approach to currency design, as a first major branch in development since the work of Satoshi Nakamoto et al. Subsequent currencies today are only variations on the Bitcoin design theme, while Worldfree is a new and different paradigm that is not even established on a distributed ledger, as transactions are not shared.

With the new approach, Worldfree hopes to seduce the evolution of money towards a more stable and private, *practically* transparent functionality, while taking advantage of a sortitive-consent-based paradigm rather than an imposed-consensus one. Backing a currency with actual assets is an ancient idea, but truly an exciting one because it is now technologically and financially practical on a large scale.

May the best currency win is our biased approach. If many currencies exist and people are free to choose the ones that keep their value, are most secure and offer the best business environments, then that choice provides a regulatory mechanism. People can take their wealth out of a currency in literally seconds, which means that tomorrow's leading cryptocurrencies will truly have to keep on their toes to earn and continue to earn their client's patronage. The FreeMark's asset backing percentage will be constantly visible so that people will know how their network is performing.

Generally, when governments try to provide a service by using force to collect money, rather than consent, everyone gets less value, as there is no incentive available to drive the development of competitive offers.

Thus, as the FreeMark succeeds and its supply expands, it will be demonstrating that it is *better* as a medium of exchange than other currencies. The Atomic Central Bank and FreeMark have been engineered so that money-supply growth increases savers' holdings of stable value, rather than decreasing the value of each unit, as with government fiat currencies. This is a truly novel idea, and patent-pending.

It is easy to equate the concept of money supply expansion with existing forced methods, where it is created for nothing and with no backing requirement. The FreeMark is created under the rule of a Digital Prerogative that will require it to invest the money paid for it to maintain, advance its functionality and generate revenue and provide asset backing. It is created and subsequently funds its own backing and the return to its holder. Of course, there is no reward without risk, and Worldfree's successful performance has to be attained through many good decisions and principled direction over the years and decades ahead.

Initially, the FreeMark derives its rule-conformity by using a well-known outside, 3rd party professional auditing firm so that it can make a transition to Digital Prerogative as it comes online with development and testing. Every new idea has to be engineered into existence, and the FreeMark is no exception. Worldfree of course operates in conformity to existing laws and financial regulations where it functions.

Digital currency truly presents an opportunity for a new *monetary* model, where people are given the choice as to which Digital Prerogative they want to select. Digital Prerogative itself, once established in a network, strips politics from the practice of economic control, returning power back to people by giving them choice in *open* markets. This is a key: competition is the regulator here, rather than politicised appointment. No more technocrats playing with funny money. Just a straight-forward business challenge of investing backing reserves to actually deliver a return to digital *cash*—that is a new one. With the Worldfree paradigm, gone are the days when you get no return for your money.

Again, ***people are more important than governments***, and because it will be a transition long-in coming if the world moves to digital currencies on a large scale, new, fundamentally sound approaches such as Worldfree's should be welcomed in society, and certainly not discouraged if governments are rational and well-meaning.

Worldfree has through astute engineering aligned its business interests, which it serves by human right, with the interests of Worldfree Network members, who because they earn financial rewards with Worldfree's successful expansion of the money supply, have an interest in supporting the network's success—as everyone benefits. A successful business in some locality, selling products globally through the Worldfree Network, can employ more people locally, pay VAT-type taxes, and bring more wealth into their region. The Worldfree Network is an opportunity for small and medium-scale businesses, as well as individuals, to enjoy global economies of scale in marketing and distribution in a stable economic environment. That is a competitive *advantage* over their larger counterparts, again emphasizing Worldfree's commitment to upward social mobility.

Consider that when members of the Worldfree community do more business, then there are more transaction fees being spread around randomly for processing. If f$10 billion in business is transacted between 3rd parties on the Worldfree Network, it means f$50 million is paid to our members for processing, or f$500 million if the marketplace does f$100 billion (less than Amazon's net revenue from about 300 million active customers).

Compare that idea to the theories pushed by government-funded academics who resent commercial success. In the Worldfree Network, anyone would be a fool to want to undermine

the success of others because network effects benefit everyone. The more successful is your neighbour on Worldfree Network, the more money you will make indirectly over time. The Free Market Institution is designed to be there providing a theoretical backdrop to this fully operational business network.

If it has escaped the reader, already an improved economic theory is the basis for much of the *economic* technology the Worldfree project. A stable currency is better for business—why doesn't the world have one? There should be many. An asset-backed currency is in everyone's interest—why are there no such currencies serving as major mediums of exchange? Again, they should proliferate and be there for people to choose amongst.

As future Worldfree Network members will discover, it is the less obvious aspects of the new Internet 3.0 envisioned by Worldfree that will be of most importance to them—they will value from the promotion of better behavioural values, formed through the mental process of induction, so that they are performing more capably in creating wealth, thus earning their families more success and opportunity. With advanced knowledge technology, they will realize that they are getting *better* information, and are more able to distinguish the difference between valid conceptual technologies and poor ones.

With the advent and application of the science of agronomy, we are today able to look out across a field of crops and see plants more consistently fulfilling their productive potential. In the same way, the improved approach to an emerging *science* of economics will one day facilitate us looking out across the field of human endeavour, seeing people more consistently fulfilling their potential. Involvement in the Worldfree world is a commitment to that vision, and an opportunity to directly benefit from it.

9 Further Information

Please see worldfree.com for information about our project and plans, and how you can participate and profit in the better world of the Worldfree Network.