GGCurrency System Proposal

By Dan Ecklund, MD

This document consists of the following sections:

I. Our Vision for this Project

- We see a new complementary currency system which incorporates all the best parts of precious metals, national fiat currencies, historical yin-type currencies like bracteaten and ostraca, cryptocurrencies like Bitcoin, and complementary currencies like Mutual Credit Systems and Local Exchange Systems.
- We see this system as a means of tying together all existing local complementary currency systems which choose to participate, as well as cryptocurrencies and the existing national currencies.
- We see this system as a way of liberating individuals from capital controls and governmental intrusion and control.
- We see this system stopping the flow of wealth from the towns to the cities and capitals, and we see it increasing the wealth and prosperity of all who use it.
- We see this system as a credit based alternative to the debt based system which has created debt slaves of most of the inhabitants of this planet, and a means to deliver them from their bonds.
- We see this system decreasing war and competition, and increasing love, prosperity, community, cooperation, and the status of women.

II. Introduction

Our money system is broken. It is skewed and dysfunctional. There is plenty of money in the world, but most of it sits in banks and never circulates. Those who need money have none, and those who have money often have too much. The 85 wealthiest people in the world have more money than about 48%

of all the rest of the people in the world combined! As a result, there is a shortage of money in most of the world, and there is a general lack of prosperity.

These problems are intrinsic to the very type of currency system the world is now using. By changing the currency system, we can change our societies and our lives. We offer a proposal for a new currency system which might mitigate some of those problems. We suggest a new, complementary money system to operate alongside, and potentially to replace, the current fiat currency system. Among the most important benefits of this system are:

- Wealth stays in local communities, rather than being sucked up by cities and governments. As a result, there is increased prosperity at the local level primarily, and in the users of the system generally
- An increased sense of community and cooperation
- Privacy in money transactions
- Removal of the necessity of using banks for money transactions and savings
- Decreased cost of money transactions
- Removal of governmental restrictions and interference in money transactions
- Stability in the international economy
- Long-term thinking in economic decision making
- Asset backing, giving stability to the currency
- Increased balance in the male-female dynamic in our societies
- Many of the benefits of the new cryptocurrencies, like Bitcoin

These points are discussed in the presentation *The Soul of Money* (see below).

I recently heard a talk from a woman from Norway who talked about "How can we reclaim sovereignty and control of our lives?" She has *almost* totally disconnected from The System. She is off the electrical power grid and heats her home with firewood. She raises her own food and works outside of the government tax system. The only part of the governmental/economic system that she is unable to do without, at this point, is her bank account. This is the only hold that the system has on her, which is preventing her from being totally free. It is time we gave her, and other seeking freedom, another option.

One point to consider: If our monetary system were so good, **why would people have spontaneously developed some 4000+ local currency systems to complement the national currency systems? If there were not persistent deficiencies in the current system, why would so many intended solutions emerge?**

III. Background

Bernard Lietaer, PhD

Bernard Lietaer is one of the architects of the Euro, a man who is known as one of the most successful traders in the world, an early computer scientist, a PhD Economist, and a professor of archetypal psychology. Bernard Lietaer (www.lietaer.com) has been writing books about how the current fiat money system does not work, and how there should be more than one type of money used in our monetary system. One type of money might be a form of complementary currency, such as those used in thousands of communities throughout the world. Another might be an asset backed currency system. This kind of multiple currency system may replace our current fiat money system in the near future. Bernard also sees the utility of the principles behind the Bitcoin cryptocurrency system; though he is not too impressed with the main manifestation of those principles, they do break new ground for us.

The Soul of Money

This paper assumes some familiarity in a 3 hour long PowerPoint presentation I prepared based on one of Lietaer's unpublished manuscripts, which he called *The Soul of Money*. *The Soul of Money* looks at money in an unusual way, though it is a way which seems to be hardwired into our psyche. In it, he explores the relationships between hard, controlled, Yang money systems and soft, accommodating, nurturing YIN monetary systems. **Each of these systems affects human behavior in different ways.** Those ways are explored in The Soul of Money, and other of Lietaer's works. These changes at the archetypal level of human behavior are the basic principles behind this proposed new currency system.

Most people who are willing to learn something new find it quite intriguing. You can download this presentation HERE. Please download and view as a PowerPoint presentation. If you just look at the slides from the file, many will look jumbled.

Gold and silver are considered by many to be historically "the only way" by most gold/silver buffs, and to be ridiculous historical anachronisms by Keynesian economists. However, Lietaer shows that hard money like this concentrates wealth in the hands of the few. That is not a result of some misapplication of Adam Smith; it is the characteristic of gold and silver themselves.

Historically, **other** forms of money have not only been more successful than gold or silver, more successful than paper fiat currencies, but they have brought new levels of prosperity to the cultures that used them. In the above presentation, the High Middle Ages and dynastic Egypt are two cultures who did NOT use gold and silver, except for long distance trading. The Egyptians used potsherds, for Pete's sake, and had a famously glorious and successful civilization, not only at the Pharonic level, but also at the middle and lower classes. The same was true for the high middle ages.

Curitiba—Bus Tokens and Garbage

Even in modern days, look at Curitiba, Brazil. http://www.lietaer.com/2010/09/the-story-of-curitiba-in-brazil/ They established a complementary currency system based on ***bus tokens and garbage***:

> The results in purely economic terms are worth noting. From 1975 to 1995, the Gross Domestic Product (GDP) of Curitiba increased an average of 75% more than its parent state of Paraná, and 48% more than the GDP of Brazil as a whole. The average Curitibano earned more than three times the country's minimum wage. If non-traditional monetary gains, such as the exchange of garbage for provisions, are taken into consideration, the real total income for residents was at least 30% higher still. The results in human terms—in the renewal of dignity and hope for a better future—can only be imagined. —Lietaer 2010 ibid.

The presentation shows how gold and silver BY THEMSELVES naturally cause a distorted system. And how adding complementary currencies into a system provides balance and abundance to the economy.

Too Complicated?

Most people, when they are exposed to this proposal, think that it is too complicated. Too "structured". Too many kinds of currency. . But I see this as an integrated system, a means by which crypto currency, gold and silver and other assets, and complementary currencies can all operate together, in a system, each adding its own benefits.

Look at the US dollar. We have, and have had, the following "dollars" all operating together:

- Fiat Federal Reserve Notes, in at least five different denominations
- US Treasury Notes
- Greenback Lincoln Dollars
- Spanish Dollars
- US Silver dollars
- Gold dollar coins
- Gold backed dollars
- Silver certificates = Silver backed dollars
- Petro Dollars
- Electronic Bank Dollars
- FRNs created by Iran and North Korea, Russia and other countries
- So-called "Black Money" dollars for secure and clandestine transport of cash.
- State bank notes denominated in dollars
- Nickel Susan B Anthony and Sacajawea coins
- Wooden coins, valued in fractional dollars ("wooden nickels")
- Fractional dollar coins in Silver
- Fractional dollar coins in Copper
- Fractional dollar coins in a nickel/copper sandwich
- Fractional dollar coins in a copper-clad zinc
- Fractional dollar coins in steel
- And even US Dollar coins minted and used in other countries along with the US dollar currency.

What a complicated mess, right? How could anyone possibly use a system with twenty or so different kinds of dollars? Right? How could the people possibly use such a "complicated" system?

And yet, Americans flow easily from one kind of dollar to another, without giving it a second thought!

Money Types

Bernard Lietaer showed that the problems in our world financial system are related to the money system itself. Contrary to what Adam Smith said, money is not value neutral; **different types of money encourage different types of transactions, and different relationships between people**

All national currencies in the world are the same dysfunctional type: fiat money, backed by nothing. This kind of money has a specific group of characteristics, many of which foster the exact monetary and social problems we have today: **scarcity, competition, unstable markets, social isolation, gender inequality, addictions, concentration of wealth, and short-term thinking** as some examples.

Lietaer has recommended adding a second type of money to work along with the national currencies. This money would have feminine or Yin characteristics, as listed below, including **encouraging circulation instead of hording, increasing local abundance, and fostering community and relationships**. Some of this role is being taken by the more than 4000 complementary currency systems in the world right now, most of them local currencies with very restricted circulation.

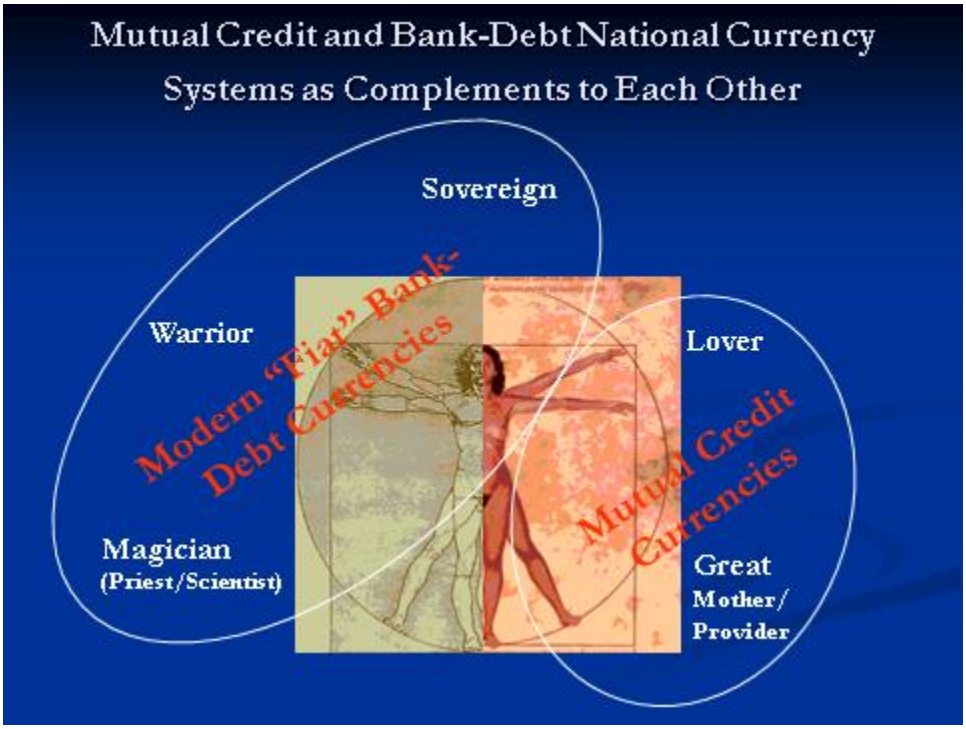

Figure 1. Mutual Credit System Complements Fiat Currencies

I am proposing the creation of a global alternative money system which includes all of the 5 archetypes suggested in Lietaer's work--the existing yang archetypes of Warrior, Sovereign and Magician, along with the neglected yin archetypes, the Lover and Great Mother, which are addressed by the local complementary currencies. This system would interface with and support existing local currencies, as well as provide a sophisticated local currency system wherever desired. It would make it possible for

local currencies to interface with national currencies. It would have the benefits of the new cryptocurrencies like Bitcoin, including autonomy, decentralization and low cost exchanges. It would also include a ***trade reference currency*** which would tend to level out business cycle instability, decrease the cost of doing business, and work against inflation.

IV. Functions of GGCurrency—What do we want it to do?

A. Functions of Money

Money is generally described as having three functions:

1. A medium of exchange
2. A unit of account
3. A store of value

But, *what is money?* James Gleick considers money to be merely another form of information:

> **"Even when money seemed to be material treasure, heavy in pockets and ships' holds and bank vaults, it always was information. Coins and notes, shekels and cowries were all just short-lived technologies for tokenizing information."—**from ***The Information*** by **James Gleick**

Lietaer narrows the type of information when he defines money as ***an agreement*** among individuals or a community ***to use something as a medium of payment.***

As we said above, what is chosen, and the way it is used, affects not only the economy and prosperity of the community, but even the characteristics of the society itself. For more on this, I refer you to Lietaer's principles as discussed in the presentation *The Soul of Money*.

B. Characteristics of Money

Table 1 contrasts the characteristics between yin and yang type money.

Yang vs Yin money

Characteristic	Yang Money	Yin Money
Scarcity	Precious and scarce	Abundant
Materials	Scarce Metals	More ordinary materials
Status	Monopoly of currency—only one allowed	Complementary Currency, Usually coexisting with Hard Money
Interest	Earns Interest	Negative Interest (Demurrage)
Ownership	Concentrates Wealth in hands of Elite	Circulates among all society
Migration	Tends to leave the community, extracting wealth	Stays in the community and recirculates
Use in Trade	Long Distance Trade—Trade outside of the local community	Community Trade--Benefits Relationships

Type of Capital	Financial Capital	Social Capital
Store of value	Store of Value	Tends to lose value over time
Means of Exchange	Yes	Yes
Durability	High	Low—Frequently recollected and reissued
Archetypes Activated	Sovereign, Warrior, Magician	Lover, Great Mother

Table 1. Yang vs Yin Money Characteristics

An important characteristic not mentioned in the chart is that all national currencies today, being particular types of Yang currencies, are based on ***DEBT*—on OWING instead of OWNING**. Making more money means making more debt, or *decreasing* the substance available! The existing system creates money by issuing debt to borrowers, and since it is all imaginary, it has difficulty working with real money, like gold and silver. A mutual credit system, by contrast, creates **credit** out of human labor: each time someone does a service for someone else, or trades goods for credits. A debt based system is inherently negative, creating lack. A credit based system is inherently a more positive system, having the potential to create abundance.

Extracting the "negative" aspects of yang money gives us a list of some of the desirable attributes we are looking for in creating a money system for GGTrust.

Yang Money

1. A store of Value—intrinsically valuable or backed by actual value, assets
2. Fungible—each one is the same value; can be exchanged 1:1
3. Divisible
4. Portable
5. ~~Scarce~~
6. ~~Accumulates in the hands of a few~~
7. ~~Encourages saving (hording)~~
8. ~~8.~~ Interest Bearing
9. ~~Encourages Short Term Goals~~
10. ~~10.~~ Good for long distance trade
11. ~~Tends to leave the community~~
12. ~~Dissolves community~~
13. ~~Fosters competition~~

Our system would remove the ~~negative characteristics~~ of yang currencies, and leave the positive.

Yin Money

1. Activates the Great Mother archetype
2. Abundant—even as abundant as human labor
3. Made of ordinary materials
4. Fosters Relationships and builds community -- Social Capital
5. Fosters cooperation
6. Tends to lose value over time – Demurrage or loss—which promotes circulation
7. Encourages Long Term Goals

8. Used with a Yang currency
9. Stays within the community and recirculates
10. Encourages circulation instead of saving

C. Currency is money in circulation.

Currency is the physical form of money. Its name comes from the way it *circulates,* like water, or blood. Currency benefits by being portable --not all money is portable, like the stone wheels used in the Yap Islands--moderately durable, and readily recognizable. Currency may be the same substance as the money standard: Gold bars may be money, but they do not circulate. Gold coins are money, AND they are currency, because they circulate. Or, currency may take a different form from the money standard. Consider that the US Dollar is defined as a certain amount of gold or silver, while its currency is mostly in the form of electronic blips or pieces of paper. One form of money may have many different forms of currency, such as we saw in Part I with the United States Dollar and its 20 or more currency forms!

D. Other functions of money which we would like to explore in this model:

1. Serve as shares of GGTrust

GGTrust would like to experiment with the possibility that the very shares of GGTrust (assets to the holder) be used as currency; or be interchangeable with currency. This was one of the main points in the initial vision of GGTrust Founder Joel Segurola regarding the creation of this currency.

Using shares of ownership as a tradable currency is not such a strange idea, as billions of dollars of currency are exchanged into and out of stocks every day. But tying the value of the currency directly to GGTrust itself gives it a closer relationship. We anticipate that using the shares of GGTrust as assets backing the currency will ultimately provide the stability and backing of billions or trillions of dollars of infrastructure-type projects backing the currency.

The word ***share*** means "a unit of account", and it is also used as a unit of value, an equal fraction of the ownership of a company, a corporation, or a Trust, such as a REIT or Real Estate Investment Trust. The word ***share*** can mean an equal portion of a company's capital, or an equal claim on the company's profits. Credit unions use **share** as their unit of account, and they provide the opportunity to make Share Deposits into Shared Accounts, and to make Share Drafts out of those Share Accounts. We will use this word Share in this document to refer to

> **A unit of value; a unit of account; an equal share of** the money which we are calling **GGCurrency. This would have an equal value to an equal proportion of claim on the assets and profits of GGTrust.**

The word GGShares will be a reference to one unit of the currency. In contrast, **GGT Shares** would refer specifically to actual shares of the assets of GGTrust. They will have equivalent value, and will be interchangeable, but not the same things, as only holders of Shares of GGTrust have a claim on the assets of GGTrust.

There are two kinds of shares of GGTrust ownership. Since GGTrust (GGT) is a trust, it is controlled by the trustees, but its value is reserved only for the benefit of the beneficiaries. Shares of claim to these benefits are recorded as Certificates of Beneficial Interest, and are available only to named beneficiaries.

It is possible to gain a ***financial interest*** in GGT by investing in its activities. One can thus become a Shareholder, and hold shares of financial interest recorded as Certificates of Financial Interest. Certificates of Financial Interest can exist as either bearer share certificates, which are unassigned to any individual, whose ownership is unrecorded, and which are freely tradable, or alternatively, assigned or recorded certificates, which are assigned to an individual or other entity, and recorded by GGT in its records. Recorded shares can be transferred only by changing the assignee, whereas bearer shares are owned by whomever holds, or bears, them. **Bearer share certificates could thus act as a form of currency.**

Investors in GGT would, by the act of investing, increase the assets of GGT. (To the accountants, yes, this would also increase the liabilities.) But increasing the GGT assets would increase the effective currency supply, since GGT shares are exchangeable with GGCurrency.

Imagine a bag of marbles, spilled and rolling around on the floor. These represent units, or "shares" of GGCurrency. There is a certain density of marbles, due to the number of marbles and the area of the floor. And the chance of a bare foot interacting with one of those marbles (having money for a transaction) is constant for that density of marbles.

Now, you have a bag of steel ball bearings of equal size. Anything that a marble can do, a steel ball bearing can do as well. And a steel ball bearing can do a few things that a marble cannot do. These steel ball bearings will represent shares of GGTrust.

If you dump your equivalent sized bag of ball bearings out, there are now effectively twice as many marbles on the floor, and the chance of interacting with a rolling sphere (having money for a transaction) is now doubled. So, the *effective* density of marbles on the floor-- the *effective* amount of currency in the system--has increased.

The more US dollar investment into GGT, the more GGCurrency is available to circulate. But unlike US dollars, increasing the amount of currency does not devalue the currency (called ***inflation***) as long as the value of the economy is increasing, as it would be in this case.

And investing into the currency system by trading other currencies (dollars, euros, yen) for GGCurrency would make more wealth available to GGT for expansion and growth and development of GGT projects. GGT projects will generate revenue, which in turn will create more wealth, in a sustainable cycle, creating more abundance for GGT, its investors, the community of GGCurrency Shareholders, and the world! While also providing the benefits of GGTrust's innovative and beneficial projects and technologies to the world. And participating in these projects is simple: just buy (and use) GGCurrency!

Since GGShares do not naturally increase by market pressures, due to the price of the currency being tied to a basket of assets, we plan on using certain milestones in the progress of GGTrust as triggers for

releasing dividends to GGT Shares. These may be cash payments, issuance of shares to the Shareholders, or other benefits. We will use milestones such as would normally cause an increase in stock value: Initial release of a new, valuable technology, for example. This will reward those who have invested in GGTrust, and secondarily, it will increase the value of the GGCurrency overall.

There will be market pressures which show if the benefits were appropriate: increased or decreased sales of GGCurrency will be a significant marker.

2. Serve as a Trade Reference Standard (like the Terra TRC)

As explained in the *Soul of Money* and the Terra website, the Terra is an international complementary currency which serves, as the Swiss Wir, to balance the cycles of the international currency system, and to **link unused resources and unmet needs.** The Terra is anti-inflationary, counter-cyclical, and backed by a basket of currencies, metals and other commodities.

3. One Currency or Several?

Lietaer suggested that a balanced system would have Yang-type "scarce money" with intrinsic value like gold, or government issued currencies, and to balance its characteristics, an "abundant currency" such as a Yin-type complementary currency.

We have played with the idea of having one "androgynous" currency which combined the best of both kinds, but we find that ultimately, this would not work as well as two different types of currency.

Take for example, the dichotomy of a scarce, "long distance" currency to be a store of value (yang). This type of currency always accumulates in the coffers of the wealthy. Now complement that with an abundant local currency to spread value throughout the community. Each of these types has its own purpose. One currency which combined these values would not work as well as two, at least as society now exists.

For another example, consider that we propose that local currency uses demurrage to increase currency circulation and the wealth of the community. This contrasts with an international "scarce" currency which might collect interest. It is difficult for one currency to be subject to both interest and demurrage. If the "scarce" currency were in widespread use in the local economy, and were not subject to demurrage, then there would be strong pressure to sell off the local currency and buy the international one. This would then take wealth out of the local economy. There needs to be a penalty or fee to prevent this from happening. That is the exchange fee.

Ultimately, it appears to us that the system will work the best when there are STRONG YANG and STRONG YIN currencies, rather than just one androgynous currency. One might make analogies to the "metrosexual" tendency in the US today to see what I mean.

4. Local vs international complementary currencies

The purposes of using complementary currencies include the following:

- Building up the local economy.
- Preventing the flow of wealth to larger cities
- Building community

- Fostering personal relationships

These purposes are best served by using local currencies to complement the national fiat currencies.

International complementary currencies such as the Terra may be good at countering some of the effects of fiat currencies, but they cannot be as effective at providing local effects. For that reason, I am recommending a network of complementary currencies, rather than just one powerful international complementary currency. It is entirely appropriate that system exist for the interchange of currencies, such as Japan's Yamato LOVE (Local Value Exchange) currency system, but intuitively it seems that many small local currency systems may be better. I suggest that GGCurrency system include a Local Currency Support function which can provide education, training, legal support, marketing materials, and the networking system needed for integration of local currencies into regional, national and international exchange systems.

5. Incorporate some of the functions of a cryptocurrency

Each cryptocurrency incorporates a verification system for its transactions, without the involvement of a third party, like a bank, to handle the transactions. And the money or asset is electronically stored and exchanged. Incorporating these features into our money will give us autonomy, freedom from governmental control, ease of transfer of money, and electronic control of at least a part of our money.

a. Autonomous transfer of digital currency

Cryptocurrencies, like Bitcoin, are definitely a major part of the future of money. Some of their features include autonomous operation without involving banks, and without control by a central bank or government. They are able to autonomously expand the money supply, at a particular predetermined rate, not subject to the whims or greed of any central banksters. Or, they may be able to respond to demands for more (or less) money in a predetermined, autonomous fashion, unaffected by outside influence. Cryptocurrencies feature decentralized control, and a decentralized ledger, so that it is impossible to steal or corrupt the accounts. Only the account owner can authorize any transfers out of his account.

In Africa, the ability of people to use banks is severely limited. But the telecom systems have taken up the slack, so that anyone with a mobile phone can transfer money or pay bills using the phone system. It does not have to be a smart phone, as it works with the simple SMS system. This same kind of simple telecom based system is now being implemented in Europe, in Holland and in the UK. There is no reason that this cannot be used in South America, nor indeed in North America, except for the severe control of fund transfer systems by the Federal Reserve and SWIFT systems.

We are watching the evolution of the decentralized (not controlled by banks or central banks) currency payment systems. Bitcoin's system is a great first generation system. Modifications to Bitcoin include Colored Coins, pegged sidechains, Ripple, and Ethereum, among others. The pegged side chains system is interesting, but has problems with utility, since it may take days for a transaction to clear one blockchain and be released to the next. That may be acceptable for buying a house, but it certainly is not ok for buying groceries.

6. Incorporate Bitcoin 2.0 characteristics

Bitcoin 2.0 describes a trend to augment the Bitcoin protocol by adding other capabilities to the existing and proven Bitcoin blockchain. The system attaches information and attributes to Bitcoin currency units to transmit non-financial information securely on the Bitcoin system. One of these additions is called "colored coins", which refers to the assignment of various attributes to various currency units.

Other processes which could be included in a cryptocurrency system include recording and transmitting intellectual property (deeds, patents, licensing), escrow functions—holding an asset until all parties involved in a transaction are satisfied that the conditions of the transaction or contract have been met, then automatically releasing the asset, and other kinds of conditional transfers of assets.

This very technology could obsolesce the use of deeds, patents, expensive money transfers, legal property disputes, and most banking operations. Estimates are that implementing this technology could save up to 17% of the GDP.

Ripple, discussed below, already has a working value transfer system in place. There are mobile phone-based value transfer systems such as in East Africa and Brixton, UK.

The Ethereum system, which will be released in the first quarter of 2015, holds promise as a completely redesigned system to incorporate the features of Bitcoin and additions to it such as the automation of agreements: smart contracts, escrow, multiparty contracts, colored coins, laws and all things legal, and the like. Ethereum will allow us to automate and transmit any kind of agreement we can imagine. And since money is an agreement between people to use something as a means of payment, it follows that Ethereum can facilitate that as well. To quote Gavin Wood, one of its creators, "**What the Internet is for communication, Ethereum is for agreements."**

Codius is another new group working with Ripple to create a means of transmitting smart contracts. Smart contracts let you turn business logic, laws, and other rules into `code`. "Smart oracles, and our implementation Codius, are a simple and powerful system for running smart contracts." Ethereum should include all of that capability as well.

7. Integration of National Fiat Currencies and Local Mutual Credit Type Currencies

If you are going to have a balance of Yin and Yang type currencies, there must be a decision on how to maintain that balance. As we have seen, Yang currencies are based on scarcity, tend to migrate to centers of wealth and commerce, and are antagonistic to relationships. Yin currencies are abundant, foster relationships, and tend to stay in circulation locally. How do we keep these forces in balance? We will discuss this in detail below under Implementation.

8. System of exchanges

If we have national currencies of various types, and local currencies of various types, it makes sense that we have a system to convert between different currencies, and different currency types. This would include exchanges and transmittals of assets between individuals, exchanges between local currencies within a region, exchanges between local and regional currencies, exchanges between national and local

currencies, and exchanges between local currencies and international currencies. Fig. 2 demonstrates this function as established in Japan.

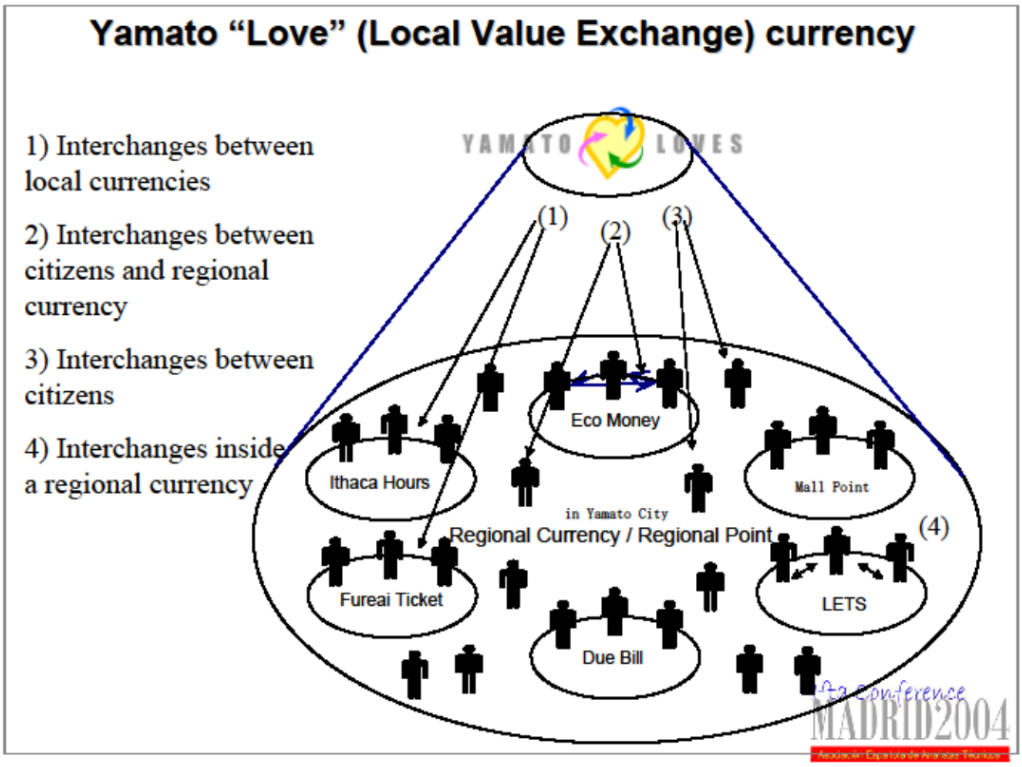

Figure 2. An example of a regional exchange system currently operating in Japan.

a. Ripple

One "currency agnostic" asset transmittal system already exists. It is a cryptocurrency system called Ripple, and it can be used with any kind of money. Banks are already beginning to use Ripple for transfer of assets, including national currencies and cryptocurrencies

Ripple is a network protocol for transmitting and receiving value. "Users of the Ripple network are not required to use XRP ["Ripples"] as a medium of exchange or as a store of value. Users can use their favorite currency, whether that's USD, BTC, XRP, or something entirely different."

> Ripple, discussed by Boutellier and Heinzen [2014], has sought to create a "federated" system for currency exchange, effectively creating a new financial clearing system. It has demonstrated that high efficiency gains can be made if the decentralization premise is discarded.

Ripple does not use mining to verify its transactions or to power its implementation, as Bitcoin and most cryptocurrencies do. Mining is the solving of difficult mathematical problems by computers in exchange for rewards of currency, and is the method that produces new units of Cryptocurrencies. What do they use for verification? They say "consensus", which is discussed in this whitepaper.

Unlike Bitcoin and most other cryptocurrencies, Ripple does not require consensus from each node in the Ripple system, but only from the nodes running the server program and function. Thus, your cell phone or computer containing a Ripple wallet do not have to contain the entire ledger, but only the servers do. And unlike Bitcoin, which requires verifiable authenticity via digital signatures for each transaction added to the ledger, Ripple merely requires consensus, or agreement, among the nodes transmitting the information. But this consensus is applied to the entire network every few seconds, to maintain the correctness and agreement of the network. And the Ripple Protocol Consensus Algorithm has been shown to provide an acceptable degree of correctness, agreement, and usefulness of transactions.

9. Resulting Requirements

Now we will incorporate the favorable aspects of Yin and Yang currencies with the selected cryptocurrency and other functions to come up with a complete list of requirements for our GGTrust currency system. The results are in Table 2.

Requirements of Currency System

Medium of Exchange	**Fungible**	**Transmit Property**
Unit of Account	**Divisible**	**Transmit Ownership**
Store of Value	**Portable**	**International Exchange**
Long distance Exchange	**Regional Exchange**	**Promotes Local Economy**
		Credit based
Provides Anonymity	**Secure**	**Builds Relationships**
Secure exchange	**Asset-Backed**	**Promotes Cooperation**
Promotes Community	**Digital**	**Promotes Long Term Goals**
Enables Prosperity	**Escrow**	**Shares of GGTrust**
Interest Bearing	**Beautiful**	**Demurrage (anti-Interest)**
Anti-Cyclical	**Intrinsic Value**	**Trade Reference**

Table 2 Requirements of a Currency System

V. Solution

Now that we have defined our requirements for a GGCurrency system, let us see how we might be able to meet those needs.

A. Create a money system incorporating both Yang (financial capital) and Yin (social capital) currencies

Only by balancing the Yin and Yang, the male and female, the commercial capital and the community capital will we gain true abundance in our lives and in our communities.

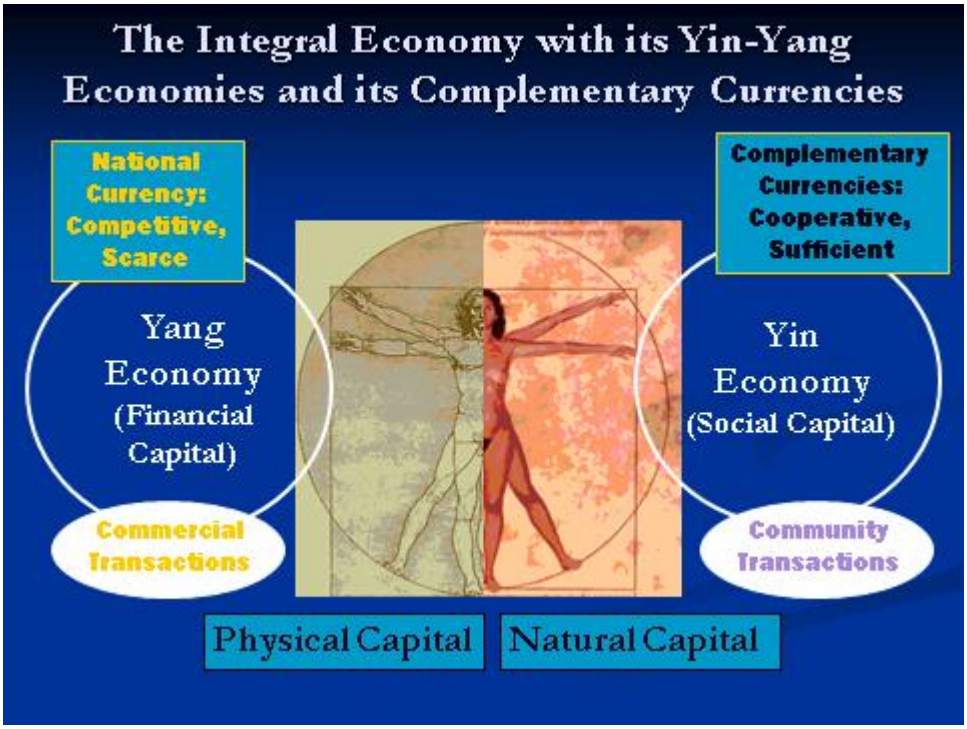

Figure 3 Integral Economy with complementary Currencies

B. Back this money (at least the Yang part) with assets

As economists from Keynes to the Chinese People's Bank today have said, a good backing for a national or international currency includes a basket of currencies, precious metals, and commodities. To which, we would suggest adding real property, energy, and shares of GGTrust, which span most industries and reach into the future.

C. Create the money as assets (credits), not debts

Fiat national money is created by banks placing loan "money" into borrowers' bank accounts. Increasing money means an increase of debt. This increases the scarcity of the system. GGCurrency will be increased by increasing the assets, or by performing labor for credit. This increases the abundance of the community.

D. Create the money in a number of interchangeable forms

We suggest creating the new money in a variety of interchangeable forms to meet the various requirements of local and international commerce. These will include a digital form, like the dollars in your bank account.

We expect that for the present, most participants in the local economies will be comfortable using paper notes (scrip) with which they are already familiar. These should be authenticated with an anti-counterfeiting holographic tamper-resistant sticker.

1. Digital

It is likely that these will exist as, or be convertible into, a cryptocurrency form, so that they will be able to be transferred globally without relying on the BIS/IMF/Federal Reserve/SWIFT/BRICS system. It is also possible that units of account in a local Mutual Credit currency system may not need to be cryptocurrencies, but they could be as well.

2. Paper notes

We expect that for the present, most participants in the local economies will be comfortable using paper notes (scrip) which they are familiar with. These should be authenticated with an anti-counterfeiting holographic tamper-resistant sticker.

We have explored the possibility of giving some of the international notes an intrinsic value by incorporating precious metal fibers within the notes. Some of these may contain precious metals in the form of fibers, or even a layer of pure metal sandwiched between layers of polyester, such as the Aurum. This would blend the yang/hard money characteristics with the yin/local currency aspects.

The purpose of incorporating precious metals into paper currency is not to provide an equal value in metal to the value of the currency, but more to give at least ***some*** intrinsic value to the notes. This, in turn, may give some assurance that there is, indeed, value backing this currency. These notes may also become collectors' items, and be removed from circulation (typical of a yang currency). If we put, as an example, $20 of gold in a $50 note, which is then removed from circulation by the owner, we then have backed $50 of currency with only $20 of gold, and it is unlikely to be redeemed.

3. Share certificates

As discussed, "Certificates of Beneficial Interest" and "Certificates of Financial Interest" will serve as recognized GGTrust share certificates, but will be exchangeable with other GGCurrencies. Some may come in bearer share form, readily transferrable, and others will be registered to the owner and records kept at Trust headquarters.

4. Local currencies

Local currencies are most likely going to be notes, usually called "scrip". These are easy to produce and transport, and can be affixed with a security seal to help authenticate them. Most of these will be printed by commercial printers with an anti-counterfeiting holographic tamper-resistant sticker.

We may also produce local coins which may contain precious metals as well, or may not. All of these currencies can be designed with images and symbols from the local area, to make them more attractive and to increase the use by local residents.

In addition, we may have special artisanal coins and notes, which are valued for their artistic or numismatic value as much as their denomination. These can be original, signed artworks, or limited run prints, and sales of these notes and coins can be an income stream for the local economy. Artisanal coins activate the Lover archetype with their beauty. Holographic stickers could be affixed or incorporated into these coins as well.

5. Fungibility vs Equality

Fungibility means that each unit of currency has the same value. Certainly we understand that each dollar, whether folding paper in your pocket, dollar coins, or digital dollars in your bank account, has the same value. But historically, not all dollars are the same. Gold dollar coins were always the standard, and paper currency was valued because it could be redeemed in actual gold coins. US Treasury silver certificates were not quite as good, but they could be redeemed in silver dollars. Today's Federal Reserve Notes (FRNs) cannot be redeemed for anything, and have lost 97% of their value in the 100 years since the first one was printed.

While all the types of GGCurrency are fungible and interchangeable, this does not mean that they are equal. Each type has specific qualities which may not be found in another type.

For example, historically a silver or gold certificate US Dollar could be exchanged for its equivalent in metal coins, a characteristic which was not present in other notes of equivalent monetary value. Similarly, a share of GGT includes certain rights and expectations which are not found in a local note. And a share of a mining stock may include such things as voting rights in that company, or dividends, which are not found in a share of GGT.

Figure 4 and table 3 below give more examples of different kinds of GGCurrency used for different purposes, and this is discussed further below.

E. Include Cryptocurrency attributes

Of the cryptocurrency attributes discussed above, we intend to include some of them in our currency solution. These will include the ability to cheaply, easily and securely transmit our currency electronically, the ability to do some conditional transactions, and possibly, the creation of shares by "mining" as in Bitcoin (through proof of work of mathematical problems, as in Bitcoin). We may add other "Bitcoin 2.0" attributes as well.

F. Create a Yin type of currency similar in function and form to the Terra Trade Reference Currency.

The Terra may be the best choice for an international Trade Reference Currency to balance the Yang currency characteristics at the international level. The local currencies are also yin type currencies, and have much more effect at the local level.

G. Apply Demurrage to at least the Yin portion of the currency

Demurrage, or negative interest, is a disincentive to hording money, and an incentive to spend it. It may be thought of as the incentive in the childhood game to get rid of the hot potato before the timer rings (demurrage payment is due). As the hot potato stimulates circulation, demurrage has been shown to significantly increase the amount of circulating currency in an economy, and thus increase the wealth and prosperity of that society.

> A dollar/euro may go round 8 to 10 times a year, facilitating a total of 8 to 10 dollar/euro worth of trade.
> Demurrage is a penalty on holding cash: typically about 12% per year. A demurrage will facilitate a massive increase in velocity of circulation. **The famous Wörgl experiment saw its units circulate up to 130 times during the 13 months it was in operation.**
> This means that with the same amount of cash up to 13 times more trade can be financed, in effect slashing capital costs by more than 90%.--Migchels 2012

As that currency circulates 13 times as much within the community**, it is in effect 13 times as much money in the community!** The effective wealth in the community therefore increases by a factor of ten. **Thus, by the use of demurrage, it may be possible to increase the wealth of the community by more than TEN TIMES the original amount, just by using this small usage fee!**

Demurrage is used in the Terra TRC to counter the effect of business cycles. But business cycles may be less problematic at the local economy level.

If the currency we are proposing is to serve as an alternative to both the Euro/dollar/yang-type national currencies, as well as the functioning at the local level, then it may be wise to have an interest-bearing form of the currency as well. There is definitely a movement against interest, both in Islamic Sharia law and in fundamentalist Christian and Jewish banking. So, if an interest-generating function was desired, this could be fulfilled either by the national currency/international currencies, or by a particular form of GGCurrency.

H. Non-Demurrage charges to benefit local currency operations

As suggested by Migchels, discounting the conversion of national currency into local currency is a way to encourage entry into the local currency system. Once the value is circulating in that system, an exchange fee will discourage removal of that value from the local economy. Part of the fee can be used to fund the local exchange facility, or to provide labor-based money. This is discussed at some length below, but here is an illustration of how it might work.

Figure 4: Exit fees encourage value staying in the local economy, while discounts for entering the local economy encourage participation from national currency sources.

I. Even though it is not a national currency, the Warrior archetype is activated by a strong legal and cryptologic protection system

Balancing the strong Yin/feminine aspects of the local currency will be the yang characteristics of the Magician archetype providing cryptological protection characteristics to the currency, and the Warrior archetype activated by legal and protective aspects of the currency. Thus, the digital and cryptologic protection aspects balance the beautiful and abundant aspects of the system.

VI. Implementation

Now that we have determined which currency system characteristics we desire, we will now discuss in detail how we might implement those characteristics.

A. Cryptocurrency Creation

1. Creation of shares by mining.

It was formerly necessary to use money "mining" to create new cryptocurrency, because mining is the work that insures the continued operation of the Bitcoin and most cryptocurrency systems. As stated above, mining is the performance of extremely complex mathematical operations as "work", which

work provides some value to the money and makes it impossible to counterfeit. Money mining verifies the validity of each transaction, and that creates the blockchain, or continuous ledger of transactions which is the basis of bitcoin and most other cryptocurrencies. Without mining, most of these cryptocurrencies would have no system. A good explanation of this process is found in this video.

However, Ripple is a new currency which provides most of the attributes of cryptocurrency systems, but it does not rely on mining for the system to be secure. Instead, they use a form of "consensus", which is discussed in this whitepaper. An arbitrary amount of Ripple's currency was created when the system was created, and no more will ever be created.

Even if mining is used to create some of our money, it is not necessary that ALL shares be created by mining. **If there is already value in an existing local economy or business within an economy, that value may be recognized as being part of the system**. Subsequently, mining can add other money to the system. In other words, if GGTrust was appraised at having a value of, say, one million dollars, then an equivalent value in GGShares could be recognized as already existing in GGTrust, and that value recognized in a new GGCurrency system. Mining would then add to the base value of the million shares.

2. Allocation of Shares

If GGCurrency functions as units of currency, and GGCurrency functions as shares of GGTrust, it does not follow that all of these shares need to be allocated to an individual, any more than that all dollars in existence or all shares of General Motors need to be assigned to an individual. In fact, in most cases of incorporation, all shares are *not* allocated, but a large number are retained by the treasury of that corporation.

Actually, *most* GGT shares would be unallocated to individual beneficiaries. They would be in the treasury accounts, and beneficiaries would have a beneficial claim on them.

Investors' shares may be allocated for them, or unallocated. Think of it like a sinking fund, in the first case, which is held in reserve in case of future need.

Iceland's new cryptocurrency allocates 3000(?) shares to each person in Iceland. Thus, shares can be pre-mined and allocated to the beneficiaries, or arbitrarily created, followed by creation through mining.

There must be a pool of unallocated shares available for those who create credit by doing work. Shares allocated by labor are discussed below.

B. Colored Shares: All dollars are not the same!

We have introduced the "Colored Coins" concept above. Here is some further discussion:

1. "Colored Coins" is a concept in the extensions of the Bitcoin protocol described as "Bitcoin 2.0".

Colored coins remove the fungibility of electronic coins by allowing coins to be tagged with specific attributes not necessarily present on other coins. For example one type of Bitcoin might include the ownership of a gram of gold. Another might include the option to purchase a share of stock at a certain

price. Another might include the ownership of a house, conditional upon another party transmitting 20,000 bitcoins into a certain account. The possibilities are literally endless.

2. Possible to create with Bitcoin

Bitcoin Is the most established and widespread cryptocurrency in use. While being widely used, it has limited capacity for expanding the types of value transmitted in its system. There are several methods suggested to "tack on" this capability, but none are as smooth as creating a new system built for this purpose. On the other hand, Bitcoin's ubiquity and familiarity do give a level of trust to this first generation cryptocurrency system.

3. Easy to create with Ethereum

Ethereum is a new cryptocurrency platform scheduled to be launched in the first quarter of 2015. Ethereum is specially designed to allow the implementation of any type of conditional contracts, instant autonomous transfer of any types of currencies or other agreements, values, assignment and registration of intellectual property, and much more.

Ethereum is extremely flexible in its ability to allow us to create whatever system that we design. We would be able to design parameters such as the rate of creation of mined coins, to exchange different types of value, switch yang types with yin types of currencies, and enable escrow functions and conditional transactions, as discussed above. We would be able to tax mining of our coins to provide a source of coins for assigning to people performing labor, and to integrate GGT Shares with various other types of money.

4. Also possible with Ripple

The same benefits of Ethereum seem to be available with Ripple as well, or will be with the anticipated addition of the Codius capacity for running smart contracts. As discussed above, Ripple is a "currency agnostic" asset transmittal system capable of transmitting any type of currency or value. Especially with the augmentation of Codius, it will allow all of these transactions. **In any event, the capacity to do what we decide to do with our money already exists.**

5. Other available applications

The idea of having independent pegged sidechains running the ledger for GGCurrency, but connected to the Bitcoin blockchain, sounds very attractive. Unfortunately, it is projected to take days to clear a transaction from one chain to the next, and that is not practical for an international currency system such as we propose. The cryptocurrency known as Freicoin offers an interest-free application, for those who find that important. The nation of Bougainville has implemented a "colored coins" version of its national currency the Bougainville Kina, in which some colors of kina are available for different kinds of transactions and national or international currency exchange. The Kina is not a cryptocurrency at this time.

Figure 5. Some functional Components of the GGCurrency System

6. Comparison of "Colored Coins" with US Currencies:

We will now explore some of the different types or characteristics to currency units as listed in Table 3.

Similar to Federal Reserve Notes, Silver Certificates, Gold certificates, silver dollars, and digital amounts in a bank account, of which all are "dollars", all GGCurrency units are fungible—have equal value and can be exchanged for each other, but they are not "equal" for certain uses.

All dollars are "Legal Tender", even if they don't look the same, but ***historically only some could be exchanged for gold or silver.*** In the case of GGTrust, GGTrust decides which ones are acceptable for exchange for ownership shares of GGT, for Gold, Silver, or other assets.

For example, artisanal local GGCoins may not be acceptable for exchange for silver, but may still be acceptable for local exchange for good and services.

Table 3. Examples of Possible Currency Names and Attributes. All of these currencies are interchangeable, like US Federal Reserve Notes, US Treasury Notes, US Gold Certificates, US Silver Certificates, Silver Dollars, and the "dollars" in your bank account. With the exception of LaborBux, all of the currency forms listed can be interchanged at will.

TYPES OF GGCURRENCY SHARES WITH DIFFERENT ATTRIBUTES

Name of Currency	Attributes	Physical Form
GGC-Short for GGCurrency	Refers to the entire money system	Various
GGCurrency	Refers to the entire money system	Various
GGShare	The basic unit of the GGCurrency	Various
GGT Share	Actual shares of ownership of GGTrust Stock, which can be traded as money. **May yield dividends.**	Digital, with some paper certificates
GGCoin	Digital Cryptocurrency version, which can be instantly transmitted to another user. **May generate interest.**	None. Cryptocurrency similar to Bitcoin. May be found in digital wallets in an account in a local Exchange Center, on a magnetic or smart card, or in a digital wallet in a smart phone, laptop or desktop computer. Can also be stored in a USB drive, CD or other form of memory. Digital accounts can also be accessed by using passbooks, checks, and bills of exchange
Artisanal Coins	Metal or wood coins created by local artists, which have been accepted into GGCurrency system to be used as currency	Locally produced Metal or wood coins with affixed holograms for authentication
Bill of Exchange	An IOU on paper. May or may not involve the GGCurrency system.	A note promising to pay the holder.
Check	Same as GGCoin.	A note promising to pay from the GGCoin account held in the computer at the Exchange Center
Terra	Generates Demurrage. Is created by trading assets into the TerraBank, and ceases to exist when redeemed.	None—is a digital currency only. http://www.terratrc.org/PDF/Terra_WhitePaper_2.27.04.pdf
GGBux (fanciful name)	Yang-type international currency. Represents shares of GGTrust. Can exchange for share certificates, or exchange for assets backing the currency. Recognized as valuable anywhere in the system. **May generate interest.**	Durable printed polymer notes. Larger denominations may have imbedded gold or silver threads, or incapsulated gold leaf or wafers. Have QR-code and hologram, security measures for protection and verification of value.

LocalBux (Fanciful Name)	Primarily used locally, though can be used anywhere in the system. Represent shares of GGTrust, and can be exchanged for other forms of GGCurrency.	Quality paper or cloth imprinted with local images and names. Has hologram, QR-code and area for stamps.
Artisanal Bux	Primarily used locally, though could be collector's items and can be used anywhere in the system, if recognized as genuine. Can be exchanged for any other type of GGcurrency.	Printed or painted on high quality paper with affixed hologram, QR-code and area for demurrage stamps.
LaborBux	Usable for local trade, but cannot be traded directly for GGShares or assets.	Printed paper with affixed hologram, QR-code and area for demurrage stamps.
Treasury Bux	Same as GGShares, except they have not been allocated to any shareholder	Digital cryptocurrency
Beneficial Shares	"Certificates of Beneficial Interest", as authorized in GGTrust Bylaws. Have the same attributes as GGShares, but can only be assigned to Beneficiaries of the GGTrust	Digital cryptocurrency or paper certificate with seals.
Investment Shares	"Certificates of Financial Interest", as authorized in GGTrust Bylaws. Have the same attributes as GGShares, but are likely to pay dividends.	Digital cryptocurrency or paper certificate with seals.

7. Some shares exist only as paper.

But these paper shares can be exchanged for electronic shares in a 1:1 ratio. We consider that local currencies may have a standard back and a local face (like US quarters or Euros issued by different countries).

High value share notes could have imbedded silver/gold to contain some intrinsic value. There is already a form of note containing gold. It is called the Aurum, and consists of pure gold sprayed between layers of polyester.

Figure 6. Aurum gold notes

Other considerations are to include threads of metal in poly or paper notes, wafers of gold in paper, and wafers or mini-ingots of gold in transparent windows.

Aurum notes and some paper notes may be printed with QR-codes, which allow verification of status of a particular note, or could refer the recipient to a website to gain more information about the system.

Figure 7: QR code

8. Physical shares

Some shares would have a durable physical representation. Consider minted coins and handmade artisanal coins of wood or metal. Fabric and paper art could be authorized for trade and imbued with share status.

9. Digital Shares

Some shares exist as electronically tradable shares. They could exist in an electronic wallet in a computer or smart phone, or on a share card, like a debit card. They could also be stored in an electronic wallet in an exchange center, accessible by visiting exchange center. This would be useful for someone less computer savvy who desired assistance with his account. In East Africa and now Holland and the UK, units of account exist in accounts in the telephone company, and can be easily transmitted to recipients with a simple SMS message on any mobile phone.

Some digital shares are exchanged through account books of the local exchange center, which in one function behaves like a Mutual Credit Facility in assigning credit and debits earned by members as recorded in a central log for those who choose to participate. These credits are logged by the exchange center personnel and signed by the members. Can be exchanged for paper or electronic shares in a wallet or card.

Local shares could even be exchanged with a handwritten note (check or bill of exchange), signed by an authorized member with an account on record.

10. Treasury Shares

Some shares exist as treasury shares in the treasury of GGTrust. These shares are not assigned to anyone, but are in an account to be used in exchanges when needed.

11. Labor Shares

Some shares are **created by labor** of someone within the system, or to benefit someone in the system or the community, but are then validated by "overlaying" them onto a recognized share from the treasury

These shares could be mined shares, which are newly created shares added to the system. **A tax on mined shares could generate shares to be given to laborers.** So could the 2% fee generated by converting local currency to national currency.

Suppose each mined block of 25 shares issued 20 shares to the miner, and 5 to the pool to be used to reward labor from new members, or impoverished members. In this case, if mining added one block each hour to the blockchain, as an example, then 5 new shares would be added to the treasury to be used for validating community labor. Each day, that would allow 120 hours of community labor shares

to be added to the circulating money supply, without diluting the overall money supply any more than the regular expansion due to mining.

12. GGTrust Share Certificates

Some shares are allocated to the Beneficiaries (through "Certificates of Beneficial Interest"). Some shares are allocated to investors (through "Certificates of Financial Interest"). Some shares are bearer shares (tradable notes could be bearer shares). Some shares are assigned to the owners, and are not tradable. These would act more like regular stock certificates.

13. International Terra-like Counter-cyclical Yin currencies

Some shares could be allocated to a counter-trade system like Terra TRC or Wir Francs. These shares could actually be created through trade only, as in these two systems, and would vanish when the shares were cashed in, exchanged, or redeemed.

14. Convertibility

Shares are generally interchangeable, REGARDLESS OF "COLOR". It is possible that there may be a premium of a few percent charged for exchange into Aurum or GGT Shares (GGBux in the chart above). This would discourage mass demand for these currency forms over others.

15. Further Discussion

I offer a technical discussion on distribution schemes for Cryptocurrencies at this site: https://blog.ethereum.org/2014/05/24/on-long-term-cryptocurrency-distribution-models/

C. Nomenclature:

What are we going to call all of these types of currency? Consider these names: ShareCoin, GGShares, LocalShares, GGCoin, GGCurrency, GGBux are possible names

1. Rationale

Different names could be used to identify specific colors (types) of coin or shares. For example, GGCoin could be the electronic version, analogous to Bitcoin. GGCurrency or GGC could represent the whole alternative/complementary money system which GGT has created and operates. GGShares could be the shares convertible or exchangeable to actual shares of GGTrust, and perhaps for a share of the basket of commodities or the metals which back the shares.

Local names such as VilcaShares, UKShares, DCShares, etc could be local shares which were exchangeable within the GGCurrency System. Existing currency systems, such as Berkshares, could participate in the GGCurrency system as much or as little as they choose.

D. Asset Backing

GGCurrency Shares will be backed by a basket of 10 or so assets, including

a. Major commodities such as Oil, steel, Copper, Wheat, Rice, Corn,
b. Real properties

c. Intellectual Property: Inventions, technologies
d. Energy production
e. Forest lands and other lands held in reserve for Carbon Credits
f. Precious metals, such as Gold and Silver
g. International Currencies
h. Technologies/Manufacturing
i. Businesses – Legal, Transportation, Financial, Mining, Biotech

GGCurrency is also backed by the collective labor of the people who work to create more GGCoins. GGCurrency shares are also valued because they include the value of shares of a billion dollar company.

Gold

Let us consider what value should be reflected in the GGShare. The value could be pegged to a quantity of gold, as most currencies were in the past, before the current fiat currency fad was begun. At current rates of about 1200 USD/oz of gold, or about $35/gram, one 10 dollar hour would be about the same value as 1/3 of a gram of gold. So, one GGShare might have a value of about 0.3g of gold.

The aurum currently comes in 1/10th gram and 1/20th gram forms, costing about $10 and $5 USD to purchase.

But the value of gold is severely suppressed by those who control the international monetary system. The downward pressure sustaining the price will be released at some point, leading to a significant rise in value. Dr. Jim Willie predicts a doubling of the price of gold, and quintupling of the suppressed price of silver.

Silver

Another metal commonly used for money is silver. Silver is an industrial metal, and is actually in significantly shorter supply than gold at this time. We consider that silver is another candidate to back the GGShare, as well as to use to peg the price of the Share. But there is no fixed ratio of gold value to silver value, though a ratio of 1 gold :15 silver has historically been used.

> The crustal ratio of silver to gold is 17.5:1.[7] The gold/silver price ratio is often analyzed by traders, investors and buyers.[8] In Roman times, the price ratio was set at 12 or 12.5 to 1.[9] In 1792, the gold/silver price ratio was fixed by law in the United States at 15:1,[10] which meant that one troy ounce of gold was worth 15 troy ounces of silver; a ratio of 15.5:1 was enacted in France in 1803.[11] The average gold/silver price ratio during the 20th century, however, was 47:1

As mentioned above, there is a significant downward pressure on the price of silver, and it is expected to make a great increase in the not so distant future, when that suppression is no longer tenable.

Baskets

We expect that gold will take a large increase in value compared to the dollar in the near future, probably doubling. Silver will likely go up five times. What would we do with the value of the GGShare

if that were to happen? Follow the gold price? Follow the silver price? Assume some ratio to tie them together, and follow that?

We feel that a better idea would be to use a basket of commodities, currencies, and other assets such as real estate, forest reserves, and electrical power production might be a better and less volatile peg for the GGShare. We could certainly include human labor in the basket, but at what rate?

GGTrust Value

The last consideration I listed above would be to use an industrial survey of the total value of GGTrust as the peg. It may be wise to put that into the basket, but it seems too vulnerable to outside manipulation to use it as the only or major valuation. It may also tend to cause some regenerative effects on the value, as changes in the value of GGT affect the value of the Basket, which affects the value of the Share, which affects the value of GGT, and so on.

E. Integrating Scarcity- and Abundance-Based Currencies

This discussion developed primarily as a result of reading the following two blog posts by Anthony Migchels:

- https://realcurrencies.wordpress.com/2014/11/19/introducing-the-talent/
- https://realcurrencies.wordpress.com/2012/01/10/mutual-credit-for-the-21st-century-convertibility/

This helped firm up the case in which labor is used to create credit. I then augmented it by further research into means of asset transfer and cryptocurrencies such as Ethereum, Ripple, Freicoin, Brixton Pound, and sidechains, was introduced to the concept of money as information, and included some further thoughts about local vs international complementary currencies.

1. First Principle: There are two major architectures that hold sway in the complementary currency world: Euro/Dollar based units and Mutual Credit based units.

The benefit of national currency valued systems is that there is an immediate understanding of the value of the local currency. But because the value of the local currency scrip is the same as the national currency, **the system is based on scarcity**, since the national currency is scarce by definition. We almost always have less money than we do things to buy with the money.

Mutual Credit based systems create money as credit [or debt]. Participants, businesses in particular, can just get a credit line in the unit and start spending. The minute they do, new money comes into existence. When a debtor repays his account, his payment cancels out his debt, so money is taken out of circulation.

> The great upside of this system is that there is no money scarcity: **people will typically experience an abundance of money and a shortage of places where they could spend the units.** The exact opposite of the Dollar/Euro situation, where

> most have less money than they would need to invest. There is interest-free credit [in the mutual credit system].
>
> But this comes with a price: there is no Dollar/Euro in the bank to back the unit or to convert. And this is a real problem, because there will always be businesses, usually the more successful ones, providing popular goods or services, who obtain too many of the units, more than they can usefully spend in the network and they will have to limit [their] intake, creating serious bottlenecks in trade. --Migchels 2012

Businesses create mutual credit currency (MC) by being issued credit in exchange for their goods or services. Individuals can only create credit that others are willing to use. If you want to paint someone's fence for MC units, he will only pay you MCs if he wants to create a debt to you, or if he has credits available which he wants to debit to pay you.

In order for an individual to create labor credit MCs, an individual must do work *for which someone else wants to pay*. In other words, labor which is valued by another party, for which they are willing to debit their own credit account, or create a debt, in order to pay for it. This will help to decrease the amount of frivolous labor-created MC units created. For example, if someone decided autonomously to wash all the cars in the neighborhood, and then expected to be paid by the system for this labor which occurred ***without agreement or contract***, there would be no obligation from the car owners, the neighborhood beautification committee, or the system, to pay her or issue mutual credits. But if the car owners agreed to pay her, or the community mutual credit facility agreed that they would authorize such a payment ***(preferably in advance),*** then she could be paid her MCs.

Certain public entities can be authorized accounts of MC credits to pay for public works. These can be created *de novo*, or authorized from the Mutual Credit Facility (MCF) through a tax on mining, as explained above, or perhaps through the funds created when Mutual Credits are destroyed by being converted to national currency (see below).

2. Pay for Mutual Credit Currency at 95% National Currency rate. And redeem at a discount as well.

MFC will serve as balance market for the currencies, and a mechanism for exchange of MC into National Currency. In our GGCurrency local currency design, the local exchange center functions as the MFC. It allows imbalances of value of the MC to be regulated by exchanging the two currencies, and it also allows the currencies to be transmitted to other recipients all over the world.

a. From the Arkansas ArBuck system:

> The Arbuck coupon will be sold to our market customers giving them a 5% discount … and the vendors may convert them back into dollars … minus 7%. The extra 2% is subtracted as a contractually agreed transaction fee to pay the costs of coupon management.
>
> However, the vendors have the option of spending the coupons with their fellow vendors at full face value … and this is what keeps them circulating as a medium of exchange.

I suggest that this is a very good model to follow: Just as money changers charge a buy/sell spread when changing Dollars to Euros or RenMinBi to Rubles, it makes sense to charge a fee for exchanging the Mutual Credit Currency/Local Currency (MC/LC) in either direction, into or out of national currency. But the purpose of this fee is not simply to make money for the currency exchanger, but also to stabilize the system.

Giving a 5% discount on the sale of local currencies encourages participation in the Local Currency (LC) system. 5% is a reasonable cost of marketing, which manufacturers would have to pay anyway to find loyal customers.

Charging 7% or so to convert the currency back into dollars/euros serves to incentivize the LC owner to spend the LC within the LC system, rather than convert out of the system. But if the number of LC units gets too high, then the relative value of them goes down, and destroying some MC/LC units by conversion into dollars/euros is a safety valve on the system. It provides a mechanism of balance to the whole system.

Another way to provide that balance is to use a currency exchange system to send the value of the currency to another recipient. This would probably require the services of a money exchanger at some point, such as a gateway in Ripple, or a MCF or local exchanger in the local Mutual Currency system.

F. Share Exchange Centers

1. Community level

The local Share Exchange Center (Local Exchange Centers) operates legally as a private club. It serves as a hub for exchange activities. It conducts training for new members and businesses. It keeps electronic wallets for members who choose, perhaps because they do not have ready access to a computer, and they load local debit cards with Shares. The Share Exchange Center exchanges between local share currency and electronic shares, and loads shares from bank accounts or paper notes into Magnetic Strip and/or smart cards.

The Local Exchange Centers coordinate and recruit local merchants into the local system. They arrange for electronic Point of Service equipment (Card scanners, smartphone apps) if needed for local merchants. They authorize and approve the creation of local artisanal coins, and imbue the *authorized* coins with value by transferring mined shares into the object, and affixing hologram, QR-code or other authentication. It is important that holograms for one denomination not be able to be used for a higher denomination, and that the stickers be protected against removal and repasting. Having a separate type of hologram for each denomination of currency, with the denomination printed on the sticker, will help discourage transferring the stickers.

Community level Share Exchange Centers authorize the creation of labor-based shares by members on a per-member basis. Labor performed must be for system members or for the community. This is how impoverished people are able to enter the trading system. This type of shares may or may not be exchangeable for GGshares, national currency, etc.

Local Share Exchange Centers coordinate and authorize exchange of local shares for international shares or national currency, and collect the fee when they do it. They may authorize some merchants to do the same, but they must then collect the 2% fee from the merchants.

Exchange centers coordinate with local Cooperativas, credit unions, shops or banks to sell, exchange or accept GGShares. Exchange centers exchange shares for Bitcoin, national currency, other local currencies. They exchange shares for Terra TRC-type currencies and coordinate business recruitment for this type of shares. They may have to be licensed or registered with local government as a money exchange office or cooperativas (credit union). They may provide microloans out of banked currencies from local members. Microloans may be in GGShares or national currency.

Local Exchange Centers coordinate the use of system members to perform community functions, such as elderly care, child care, street cleanup, park beautification, community garden care. Local governments may contract with the trade office to

1. provide workers with national currency in exchange for their labor
2. Accept national currency but pay workers in part in shares
3. Provide national currency but office will retain some funds to be used for microloans

The Exchange Center office could double as community meeting room, or could use space in a community center.

2. Regional Exchange Centers

Regional Exchange Centers, at the provincial or state level, provide training and support for the local centers. They provide local government interface and coordination, and coordinate large business or banking involvement. If necessary, they will coordinate exchange with local currencies not part of GGCurrency system. Using Ripple or a similar system probably will make this unnecessary.

3. National Exchange Centers

National Exchange Centers provide training and support for the local and regional centers, provide national government and bank interface and coordination, and provide legal support to local and regional offices. National centers access GGCurrency Central Centers directly.

G. Demurrage

Demurrage is bound to be an issue of concern for the local currency system member. The purpose of demurrage, or “negative interest”, is to keep the currency circulating in the local community, to increase the prosperity of the community.

As we saw above, using demurrage on a local currency can increase circulation rates, and thus effective wealth rates, by more than ten times. We therefore think that, in spite of its negative initial connotation, it is still wise to consider using demurrage.

1. Local currency

Demurrage on the local currency supports the local exchange center, and keeps currency circulating. The usual demurrage rate is about 12%, but half of that may be sufficient. If the rate is too high, it may encourage the user to convert the currency out of the system into national currency.

For this discussion, we will propose that local currency has 1% per month demurrage, or 12% per year. This usage fee is taken out of electronic accounts on a monthly basis for "bank accounts" at the Exchange center. It is subtracted from smart wallets, smart phones at the time of transaction as a transaction fee.

Demurrage is charged on bills and coins on a quarterly basis, and can be documented with a quarterly stamp or sticker, or with an online account that can be checked against a QR code printed or affixed to the currency. Shops, Exchange Centers or smart phones can validate tax status of coins/bills with the QR codes

Each note or coin has an issue date or last stamp date. A "Paid up" note will be recognized as having a higher value than a note with fee due. If there is no evidence that the demurrage has been paid, the recipient will know that he will have to pay that fee, so that the value of the bill is lowered by a certain percentage, counting months back to the issue date or the date of the last stamp. The recipient may choose to charge the buyer the difference in national coins, for a small amount, or a higher amount of GGCurrency, for a larger amount.

As we have discussed, there will also be a fee collected when local currency is exchanged into national currency. This fee typically is 3 to 10%, although we suggested 5-7% above. Lietaer suggest a 2% fee for conversion of his Terra currency into national currency.

2. Trade Reference Currency

See Terra White Paper for a detailed explanation. Demurrage on the Terra is set at 3.5 – 4% annually, with a 2% fee to exchange into national currency.

H. Dividends

Dividends are commonly issued to holders of shares of a corporation as a payment for the use of their money. It will be difficult to issue dividends on all colors of GGShares. It will therefore be likely that only certain colors of shares will receive dividends. The first shares to receive dividends will be those attached to "Certificates of financial interest", or investment shares. Registered shareholders will automatically be eligible for dividends. Holders of bearer shares may register with GGTrust investor services to receive dividends. Suitability for other colors of shares to receive dividends or interest must be determined. Trade Reference Currency (Terra) shares will not receive dividends.

How GGCurrency Meets the Proposed Requirements

Requirement	How Satisfied
Medium of Exchange	**GGCoin, GGShares, Local notes, coins, etc Terra TRC Exchange centers operate to promote exchange**
Unit of Account	**GGCoin, GGShares, exchangeable with other currencies in the system**
Store of Value	**GGCoin, GGShares**
Long distance Exchange	**GGCoin Cryptocurrency**
Provides Anonymity	**GGCoin Cryptocurrency**
Secure exchange	**CCGoin Cryptocurrency**
Promotes Community	**Local Currency**
Enables Prosperity	**Local Currency. Terra**
Interest Bearing	**GGShares and GGCoins can bear interest**
Demurrage (anti-Interest)	**Local Currency and Terra have Demurrage**
Anti-Cyclical	**Terra TRC**
Fungible	**All currencies interchangeable**
Divisible	**GGCoin especially, also Local currencies**
Portable	**GGCoin, GGBux, notes, coins, and digital wallets**
Regional Exchange	**Enabled by GGCoin system and regional exchange centers**
Secure	• **Cryptocurrency** • **Hologram, QR-code** • **Other anti-counterfeiting means on GGBux**
Asset-Backed	**Basket of Commodities, currencies, Assets**
Asset Based	**Work creates money as a Credit, not a Debit**
Digital	**GGCoin**
Escrow	**GGCoin can do that with Conditional Transfers**
Beautiful	**International standard art for front of**

	GGBux, **Local artists design back of GGBux.** **Artisanal production of coins, local notes.**
Intrinsic Value	**Coins, and Paper currency with gold threads and wafers; Aurum**
Transmit Property	**GGCoin can do that with Smart Property**
Transmit Ownership	**GGCoin can do that with Smart Property**
International Exchange	**GGCoin is great for international trade**
Promotes Local Economy	**Local Money Stays Local**
Builds Relationships	**Local Money has Yin value**
Promotes Cooperation	**Local Money has Yin value**
Promotes Long Term Goals	**Demurrage in Local Currency**
Shares of GGTrust	**GGShares**
Trade Reference	**Terra is a Trade Reference Currency**

Table 4. How GGCurrency Meets the Proposed Requirements of a Balanced Currency System

VII. Weaknesses and questions

A. Complex at the local level

1. Might be difficult for local people to deal with demurrage issues of paper currency, and with the variety of types of currency.
2. This will be easier for those with a smart phone, where there is basically one option, and demurrage is automatically applied.
3. Electronic money will also take away the need to handle notes.

B. What should be the value of a GGShare?

The first part of this question could be: How is the value of the GGShare determined? We discussed pegging the value to different assets above. We will continue from that discussion.

1. **Equal to the value of 1 hour of labor, or pegged to a fraction or multiple thereof**.

We will first examine this interesting possibility, which is the choice of some famous and successful complementary currencies, such as the Time Dollar and the Ithaca Hour. The latter issues 1/10, 1/8, ½ and ¼ hour fractional notes, as well as a variety of multiple Hour notes. These work within a local community. But would this method be suitable for disparate economies and wages in an international currency system?

2. Wage disparity with a currency tied to an hourly wage.

We appreciate the attraction and egalitarian intention of having a currency tied to what actually creates value in money: Human Labor. But what do you do when the value of an hour of labor is markedly different in different locations, and for different people? What pressures does this place on a money system? Consider a surgeon in New York, a laborer in Ecuador, and a laborer in Bangladesh.

The laborer in Ecuador may expect to be paid $2 per hour. If he is in a town which is using GGShares or a local currency which has a value par with GGShares, he may be quite happy to receive one GGShare for an hour of labor, if he can exchange the GGShares for produce at the Sunday market at a rate of $2 dollars per GGShare. The Share then has a value to him of $2 USD (US dollars are currently the local currency in Ecuador.)

The laborer in Bangladesh is accustomed to receive less than 50 cents per hour of his labor. The minimum wage in Bangladesh is currently 68 dollars per month. If we assume a minimum of 40 hours per week x 4 weeks, that is 160 hours for 68 dollars, or $0.425 per hour.

If the Bangladeshi man worked in a clothing factory which sold its products to a foreign country for GGShares, then the factory might have GGShares to pay its workers. This worker could be very happy to receive the standard one GGShare per hour for his labor, especially if this Share could be traded internationally for $2 dollars. That would give him more than four times the income than he would with the national currency.

Even if he could not easily access international rates for his currency, it would still tend to increase the value of his labor by trade pressure—the increased value of the Share in international trade would make its value in the local economy tend to rise, and that would tend to make the value of his labor rise. And since it is simple to send GGShares overseas with the help of his local exchange facility, and for minimal cost, he has a much better chance of getting a good rate of exchange for his GGShares on international markets than he would for US dollars in a local market.

3. Priced Out of the Market

The surgeon in New York may make $500 USD per hour of his labor. He is not going to be in the market for using GGShares to pay for his wages on a share per hour rate. If he wants shares, he can earn a lot more by working for dollars, and using the dollars to trade for shares. We can see that it would be easier to buy a share of GGT from New York on New York wages than from Bangladesh

The surgeon could prefer to be paid in national currency, or if his patients turn out to really want to pay their bills in GGShares, he could receive his compensation as multiple shares per hour.

4. "Hours" Tend to Raise Low Wages

Thus, using a standard of one hour of labor for **the value of a GGShare would tend to raise the wealth and prosperity of workers with low incomes** under national currencies, who were now paid with GGShares. Workers who were to be paid more than minimum wage could still receive fractions over the minimum one share wage, or even multiples of the minimum wage.

5. Local Currencies: Different Values

One solution to the wage disparity issue would be to have one international currency with a value intermediate between different wage rates, and then local currencies more closely tied to the local wage rates. This would allow a uniform international currency base, functioning as an international reserve currency, and local currencies tied to it by individual exchange rates. This would be advantageous if the goal for the local currencies were to have a value equivalent to the local wage. It would not, however, have the same characteristic of pulling up low wage economies.

6. Fractional and Multiple Notes

Assuming still that we are using the base value of the GGShare to be the value of one hour of human labor, then if we were to say that 1 hour of labor is the value of a GGShare, then how do we subdivide them? Do we have tenth-share bills? We would certainly need to break them down at least that much in the USA! Assuming only a 10 dollar minimum wage, we may want to have fractions down into at least the fineness of 1/200th of an Hour, or 1/20th of a dollar, or 5 cents of a dollar.

Making the basic note worth ½ hour of labor might make it equivalent to about $5 dollars or so USD, and 1/100th of those would be about a nickel (5 cents). An alternative would be to use national currency coins along with GGShares, if need be. Having fractional hours would be easy with electronic shares, but would require coins or small notes when using physical currency.

Multiples of the Share would be easier, as we are used to seeing 5, 10, 20, 50, and 100 denominated notes, and adding perhaps 500 and 1000 notes would be sufficient.

7. Implementation

i. Initial Value:

To increase acceptance of the currency, we need for it to be as familiar as possible to the users. We therefore propose pegging it initially to the value of the US Dollar. But to separate its value from the USD, and to prepare for expected devaluation of the USD, we propose that we initially use a value between the value of the dollar today and the value of the dollar 100 years ago.

Since the dollar has lost 96% of its value in that period, we know that the same currency has been used for two orders of magnitude of value, and this range of values is usable. If the value of the dollar 100 years ago was about 2 orders of magnitude greater than today, we suggest that we split the difference, and go with one order of magnitude (tenfold) greater value than today. This is in line with the value of the Ithaca Hour as approximating the range of value for an hour of human labor. It is also in line with the value of a 1/10th gram Aurum note. And being an even, decimal multiple of the current world reserve currency will make familiarization easy. $10 will be the initial value, and this value will be based on various proportions of a basket of assets, to be determined.

ii. Changing Value

Once the users are familiar with the initial value of the currency ($10 USD), the values of the assets in the basket upon which its value is based will begin to shift. We believe that in particular, the USD will have a significant decrease in its value, even faster than it has been decreasing over the

past several years. And the values of gold and silver are very likely to significantly increase. We choose to make an algorithm which provides that, as the value of an asset in the basket of assets upon which the value of the currency is based diminishes, that the importance of that asset in the basket decreases.

We consider continuing that model to make rising assets more important in the calculation, but this is likely to cause too great of a ratcheting upwards. Dropping the value of the decreasing assets will give a small upward tendency of the value. We feel that it will be enough to remove the "dead weight" of a dying dollar, but not frivolously inflate the value.

We expect that the USD will naturally transition out of a significant part the basket. In fact, it may be wise to plan on transitioning away from the USD, regardless of whether it drops in value. This will allow GGCurrency to seek its own level, independent of the price of USD.

C. What do you do when the price of a share of GGT rises (due to market demand) significantly above the price of one hour of labor?

For example, consider the case if a GGShare started out valued at one hour of labor or $10, but the market drove the price up to $200 or more, as in the case of Bitcoin. This is not so likely to happen, since the price of the shares is regulated by the price of the commodities and assets in the basket. If the shares are pegged to the basket of currencies, then investors may resent not letting the price of their shares rise. But it does bring stability to the whole system.

Still, since the value of GGT is a factor in the value of the shares, the value of the shares may tend to rise. There could be a mechanism to bring the price down by splitting the shares, or bringing the price to a standard against the basket of commodities by the means of increasing the number of shares. For example, if the shares are worth $10 each, but then the price tends to go up to $20 each, all shares would be multiplied by 2, so that the value would remain the same, but the number of shares would increase, increasing the wealth of the whole system.

D. GGT is a hierarchical organization. Is this the best model for us?

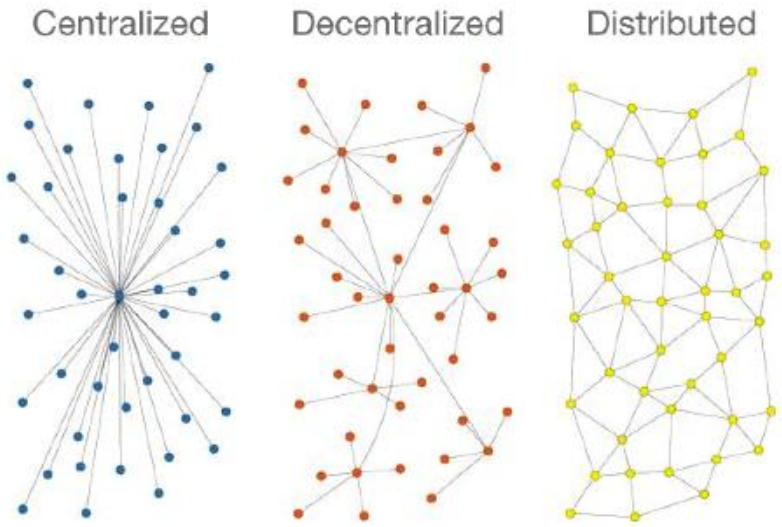

Figure 8: Types of systems or networks

1. Figure 8 shows three different types of networks. The first is a centralized system, in which all points are directly controlled by the central node. The second is a decentralized network, in which the primary node is connected to about six secondary nodes, which in turn connect to the tertiary nodes. The GGCurrency system we have described is most like this model.
2. The distributed model lacks any kind of hierarchy. Bitcoin is an example of a distributed network like this. The Internet is another. There is no central node or any power structure to be taken down by those who wish to control the system. If one or several nodes are taken out of the network, it has little effect on the operation of the network as a whole. This is a much better model for us to emulate, but it is difficult to see how we might do it.
3. A Distributed Autonomous Organization (DAO) may be the ideal we strive for. This is an organization which does not have a central control, and whose functions are conducted automatically by contracts which define transactions among the members of the organization. See this discussion: https://blog.ethereum.org/2014/05/06/daos-dacs-das-and-more-an-incomplete-terminology-guide/

E. Creating Money by Accepting Labor.

1. **The greatest asset of a Mutual Credit System is the infinite capacity for creating credit.** Anyone can perform labor to benefit someone else, even if he has no money or local currency. A Mutual Credit System is simply a ledger of the hours of service provided or received, or goods exchanged for credit, by the members. The more exchanges there are in any such system, the healthier the system.
2. **In a properly run complementary currency system, there should be a match between the amount of labor available, and the amount of money ready to absorb that labor,**

like a sponge. As we saw in Curitiba, such a system can markedly absorb the excess labor, and increase the amount of money, in a community. But a mismatch between amounts of Labor and amounts of money in either direction can cause problems.

   a. If there is too much labor claiming the available money, then labor is wasted and unpaid.
   b. If there is too much money for the amount of labor available, then the price of labor goes up by supply and demand. If the money happens to be asset backed money, then the assets are consumed at a higher than optimal rate.

3. **In a system in which there is an asset backed currency, care must be taken to not dilute the value of the currency by having more units of currency than there are assets to back it.** This is called inflation.
4. **Still, increasing the amount of money in a system is desirable**, as long as the amount of assets increase at the same rate as the amount of money. The more money in the system, the more there is to circulate and to spend, as long as it is still appropriately backed. This leads to abundance.
5. **5. In an asset-backed system in which there is a high amount of labor claiming the money available,** there may be a draw on the money supply (and the assets backing the money) which is unsustainable. ***It then may become necessary to limit the amount of raw labor entering into the currency system.***

By raw labor, I mean labor done which is not going to be paid by a member of the system who has his own currency. The labor may be valuable and skilled, or it may be appropriate to the needs of the community, but there is no money to pay for it. It is beneficial to the community that such labor be performed, and that the worker gets paid, but there is a limit how much of this unsolicited or unpaid labor a community, or a currency system, can support.

In order for an individual to create labor credit MCs (Mutual Credit units), an individual must do work *for which someone else wants to pay*. In other words, labor which is valued by another party, for which they are willing to debit their own credit account, or create a debt, to pay for. This will help to decrease the amount of frivolous labor-created MC units created. For example, if someone decided autonomously to wash all the cars in the neighborhood, and then expected to be paid by the system for this labor which occurred ***without agreement or contract***, there would be no obligation from the car owners, the neighborhood beautification committee, or the system, to pay her or issue mutual credits. But if the car owners agreed to pay her, or the community mutual credit facility agreed that they would authorize such a payment ***(preferably in advance),*** then she could be paid her MCs.

Certain public entities can be authorized accounts of MC credits to pay for public works. These can be created *de novo*, or authorized from the Mutual Credit Facility (MCF or Local Exchange Center) through a tax on mining (see below), or perhaps through the funds created when Mutual Credits are destroyed by being converted to national currency

6. **I suggest a mechanism of taxing the production of newly mined currencies**.

Mining is the solving of difficult mathematical problems by computers in exchange for rewards of currency, and is the method that produces new units of Cryptocurrencies. A tax can provide new currencies which can then be used to connect with the labor coming into the system. The rate of the tax and the rate of production of mined money will determine how much new labor can be accepted into the system, and paid by the system.

It appears that tweaking the proper amount of money growth and the proper amount of labor to accept into the system may be one of the biggest challenges affecting people at the lower levels. This could be done by a committee of experts, or by a Distributed Autonomous Organization once we have the understanding to write the code for the conditions ruling this regulation.

7. Different kinds of work could be rewarded. In the Ethereum discussion they suggest distributing coins to those who perform work which benefits the system. I suggest that work which benefits the ecology and community also be considered.

Allocations of coins could be provided to each level of hierarchy, including the local community government, and awards made at each level.

There could be a committee, ad hoc or made up of all members, or a representative council, at each level to oversee the awarding of coins for word. Given the propensity of local governments towards nepotism and corruption, it seems that non-governmental members should be involved even at the local government level. But automating the distribution of coins might be better.

Consider a village council who select work which needs to be done to benefit the community, and a subcommittee which selects the workers who would like to perform this work. A committee member from outside of the council would be chosen to work with the village council, so that the beneficiaries of the program are not only cronies of the council members. Or, the council could turn the job over to the local exchange center, but then it might be wise to have a council member, and/or an outside member, involved in the selection/assignment process as well.

Once coins available, work available, and workers selected have all been determined, there could be an automated system whereby workers sign in and sign out, and have their work verified on a computer, which would then automatically (thru an Ethernet contract) issue to their wallets the coins in question.

This same program could work at the world level (create a nuclear waste handling program), a national level (plant trees in the national forest), or any level in between.

F. Should we create a checking system?

We will have a card system, but that will not be useful for paying an individual who will not have a point of purchase device! Similarly, a handwritten note on a piece of paper often serves as a bill of payment in a mutual credit organization, of which we are incorporating many of the characteristics.

G. Should we create a passbook system as a way to interface with the computer ledgers?

Could be useful for those who are financially challenged, and prefer to have someone check their account and update their book. The member could then deposit or receive GGShares, GGCoins or GGBills at the exchange office when his passbook is updated.

H. Should we get involved with a Bill of Exchange system as part of the GGCurrency? Should we teach people how to do it themselves outside of the system?

A BoE is simply a promise to pay. It is created by the recipient of goods or services, and given to the provider of them. The provider then may exchange that BoE with another vendor for his goods and services. That note may continue to be traded indefinitely until someone gives it back to the creator, who redeems it with his own goods or services, or with money. Many debts can be cleared in this way without using money.

The stronger the reputation of the creator, the more acceptable the BoE. BoEs created by businesses are therefore more readily accepted. Some groups have special forms for this purpose. An official-looking form also makes them more acceptable.

GGT could teach people how to use this on their own, and could provide some of the forms for this purpose, or design them and put them online for people to print and use. GGCurrency would not need to be utilized, but BoEs could still be useful in increasing the prosperity of the community.

A more formal use of a similar situation might involve the use of Terras, which would be generated in exchange for the sale of excess inventory or capacity.

I. Keeping GGCoin price and Asset-backed GGBux and GGShares prices all aligned may prove challenging

1. There will be market pressures driving GGCoin (the Bitcoin-like digital cryptocurrency in the sytem) higher and perhaps lower
2. There will be market pressures and investment pressures driving GGShares higher as investors pour money into the companies and projects of GGTrust
3. The asset reserves backing GGCurrency may be challenged to put up with the demand for the currency, especially if we let too much new money be created by labor.
4. Still, the interchangeability of these different currency forms will reach equilibrium.
5. Convertibility of local currency to national currency will provide some balance.
6. A fee for interconvertibility will tend to dampen the conversion out of local currency.

VIII. Conclusions

We propose the creation of an international complementary currency system, to balance the inherent Yang characteristics of the international fiat national currency system. As a minimum, this system would have the following characteristics:

1. An international yin-type complementary currency to balance the yang-type national currencies.
2. Local Yin-type currencies which can be exchanged into the international currency system.
3. Autonomous, and free from external manipulation (no central banks or governmental control)
4. Self-regulating without outside interference --autonomously able to expand or contract money supply to respond to changing demands for currency
5. Secure from theft or counterfeiting and governmental observation or control
6. Unlike fiat currencies, cannot be overproduced to cause inflation and loss of value
7. All the benefits of Bitcoin: easy and inexpensive local and international money transfers, without requiring the services of a bank, and without government oversight or control.
8. Unlike the national currency or Bitcoin, our currency has intrinsic value, and is asset backed
9. Unlike Bitcoin, it has a physical representation that can be used locally.
10. It is Beautiful
11. Creating or using it does not create more debt (unlike the current system)
12. Non-Scarce, abundant currency
13. Benefits local communities: keeps wealth local, instead of exporting it to the cities
14. Inherently causes increased wealth, abundance and prosperity in the communities using it
15. Tends to benefit entire communities, instead of being concentrated into the hands of a wealthy few—benefits the village as well as the castle
16. Promotes relationships
17. Promotes Community
18. Inherently benefits women
19. Has historical evidence that this type of system benefits society

Optional characteristics might include the following:

1. Includes a mobile phone based bill payment system
2. Linkable to the value of local labor
3. Able to be produced with labor
4. Initial value equivalent to $10 USD
5. $1/10^{th}$ gram gold Aurum notes serve as a standard currency
6. Paper notes, which may have gold threads in the paper, interchangeable with the Aurum notes, circulate as well
7. Precious metal coins may circulate as well.
8. Incorporates bearer shares of GGTrust as currency
9. Incorporates artisanal local currencies
10. A form of currency which earns interest
11. An international trade reference currency with demurrage.

XI. Glossary

Alternative Currency	A type of money used instead of an official, national money
Archetype	A recurrent image that patterns human emotions and behavior, and which can be observed across time and cultures.
Artisanal	Created by an artist or craftsman outside of an industrial setting.
Asset Backed	Having no intrinsic value but given value by connection with something else;
Beneficial Shares	Fractions of ownership by a beneficiary
Bill of Exchange	A document guaranteeing the payment of a specific amount of money, either on demand, or at a set time with the payer named on the bill.
Bitcoin	An open source cryptographic protocol that operates on a peer-to-peer network and creates and transfers eponymous units of currency.
bitcoin	A unit of a digital cryptocurrency which is transferred via the Bitcoin system
Bitcoin 2.0	The system to attach information and attributes to Bitcoin currency units and to transmit non-financial information securely on the Bitcoin system.
Blockchain	The series of blocks of validated information forming the distributed ledger of the Bitcoin system.
Bracteaten	Thin, wafer-like coins used as money in the High Middle Ages. They were easily damaged and frequently collected and reissued. See The Soul of Money.
BVK	Bougainville Kina, the official money of the island of Bougainville in the Solomon Islands
Certificate of Beneficial Interest	Certifies standing as a beneficiary of a trust and having a claim on its assets
Certificate of Financial Interest	Certifies standing as having standing and a claim on the finances of a trust
Colored Coins	Assignment of different types or characteristics to currency units
Community	A group of people with a common interest living in a particular area
Complementary Currency	A type of money which **works with** the national money to provide needed benefits which would otherwise be lacking
Commodities	Something of value commonly bought and sold in quantities.
Conditional Transfers	Transfer of funds depends on meeting certain requirements, such as signatures, fulfilling obligations, or performing actions.
Cooperativa	A credit union or financial services company in many Latin American countries
Counter-Cyclical	Acting contrary to a business cycle, so that when business activity is increasing, this activity decreases, and vice versa.
Counter-trade	Acting contrary to a business cycle, so that when business activity is

	increasing, this activity decreases, and vice versa.
Currency	Money in circulation. A portable version of money or representation thereof. Coins, notes ("bills"), and electronic records are the most common forms.
Currency System	A system of circulating and using currency, usually containing physical as well as digital currencies of different amounts, and a system to regulate the currencies.
Cryptocurrency	A form of money that uses cryptology to control its creation and management, rather than relying on central authorities
Decentralized	Located at several different locations, instead of just one.
Demurrage	A charge made to the owner for his use of money. Reverse Interest.
Digital Currency	Currency existing entirely as computer records in accounts.
Disseminated	Located at several different locations, with no control nodes.
Dividends	Money paid to the owners of bonds or shares of a company.
Divisibility	Able to be divided into smaller functioning parts.
Electronic Wallet	A computer program which keeps track of currency, generally in a secure, encrypted form. Can be located in a computer, smart phone, or in a memory device.
Escrow	Money or other assets held in trust by a third party to be turned over to the seller only upon fulfillment of a condition
Ethereum	A protocol for creating cryptocurrencies and conditional transactions, with an emphasis on colored coins and whatever different characteristics are desired. http://blog.ethereum.org/
Exchange	the act of giving or taking one thing in return for another
Fiat Currency	Money which has no intrinsic value, but which is considered to have value because of a pronouncement by an authority
FRN	Federal Reserve Notes—the common US "dollar bill"
Fungible	Equivalent to all other units of a similar type.
GGBux	Printed GGShare notes designed for trade, local and international
GGCoin	A cryptocurrency which is traded as part of GGCurrency system, and which is equal in value to a share of GGTrust
GGCurrency	The money system initiated by GGTrust, and incorporating shares of GGTrust, currencies exchangeable with those shares, and commodities which back the currencies
GGShares	Fractions of the assets of GGTrust, and tradable notes representing those shares
GGTrust	Global Genius Trust, an international holding company
Intellectual Property	Ideas and written or created materials having commercial value
Interest	A time-based fee for borrowing money. Generally a percentage of the money borrowed
Intrinsic Value	Having value in and of itself, without needing to be backed by anything else. Such as a gold coin, as compared to a dollar bill backed by gold.
Investment Shares	Fractions of the financial assets of GGTrust, obtained by investing money or something of value into GGTrust of one of its companies
Ledger	The record of transactions that a bank or company keeps.
Legal tender	Officially accepted for the payment of debts and taxes.

Mining	The process of using computers to solve complex cryptologic problems in order to validate the ledger of a cryptocurrency. Solving the problems is rewarded by the creation of new currency units for the miner.
Money	An agreement by a community to use something as a means of payment.
Money of Account	A denominator of value or basis of exchange which is used in keeping accounts and for which there may or may not be an equivalent coin or denomination of paper money
National Currency	A nation's officially sanctioned money
Ostracon	A potsherd used as a receipt or as currency by the Egyptians, Greeks and others. See The Soul of Money.
Passbook	A small booklet modified by a bank and used as a ledger for a customer to keep track of the amount of money in a bank account
Real Property	Real Estate, land, houses, buildings
Share	A fraction of the ownership of an enterprise
Smart Property	Property whose ownership is controlled via the block chain of Bitcoin or other cryptocurrency, using contracts
Social Capital	The amount of benefit to a society and community relationships
Terra	A currency designed by Bernard Lietaer for international trade, intended to counterbalance the instability of national currencies.
TRC	Trade Reference Currency. A basket of commodities to be used as a standard in trade.
Treasury Accounts	Corporate accounts in which unallocated funds are stored
Unit of Account	A standard monetary unit of measurement of value/cost of goods, services, or assets.
Wir	Swiss complementary currency dating back to the 1930s.
Yin	Chinese term for that which is feminine, dark, cold, mysterious, yielding. Opposite of Yang
Yang	Chinese term for that which is masculine, strong, bright, hard, hot. Opposite of Yin.

Table 5. Glossary of terms used in this paper.

XII. LINKS

The Soul of Money PPT Presentation

Bernard Lietaer Website

This document for download, Latest Version: GGCurrency Proposal

Balancing mutual credit and parity systems:

> https://realcurrencies.wordpress.com/2014/11/19/introducing-the-talent/
>
> https://realcurrencies.wordpress.com/2012/01/10/mutual-credit-for-the-21st-century-convertibility/

https://www.youtube.com/watch?v=NFdU0dnpwYM James Corbett discusses Bitcoin, alternative currencies, and the need for an integrated new currency system.

RIPPLE:

Ripple Primer

Ripple Executive Summary for Financial Institutions

The purpose of money is to record value across a network of people.
https://ripple.com/ripple-and-the-purpose-of-money/

Ripple consensus Whitepaper

http://codius.org/

Blockstream

ETHEREUM: A SECURE DECENTRALISED GENERALISED TRANSACTION LEDGER PROOF-OF-CONCEPT VI

Aurum: http://www.peakprosperity.com/podcast/84359/new-way-hold-gold#

Brixton Pound has a Pay by SMS system like in East Africa.

Dropbox link: https://www.dropbox.com/s/v8glba6204anl3u/GGCurrency%20Proposal.docx?dl=0

This version is an update to prior version 2.03: Changes regarding the integration of mutual credit systems and national currency-backed systems developed primarily as a result of reading two blog posts by Anthony Migchels:

Ref: https://realcurrencies.wordpress.com/2014/11/19/introducing-the-talent/

https://realcurrencies.wordpress.com/2012/01/10/mutual-credit-for-the-21st-century-convertibility/

This helped firm up the case in which labor is used to create credit. I then augmented it by further research into means of asset transfer and cryptocurrencies such as Ethereum, Ripple, Freicoin, Brixton Pound, and sidechains, introduce the concept of money as information, and included some further thoughts about local vs international complementary currencies.

Expansion of many of the outlined lists into prose. Many explanations were clarified. Section on distributed and disseminated networks was added.

Many links were added to the text.

Version 3.01:

Some links were repaired

Typos corrected.

Occasional explanatory information about cryptocurrencies was added.

Version 3.02:

Further expansion of the use of demurrage

Discussion of income disparity and their relationship to GGCurrency

Use of currency in funding GGTrust

GGCurrency as a credit based system

Version 4.0:

Demurrage: Changed site where discussed. Amplified explanation.

Use of GGTrust shares of trust as currency discussed at length.

Use of currency in funding GGTrust discussed.

GGCurrency as a credit based system amplified.

Wage disparity and its relationship to CCGurrency.

Definition of shares clarified.

Definition of Currency added.

Money vs Currency uses cleaned up.

Value of a share discussed, and pegging to various things.

Security stickers brief change.

Discussion of need for strong yin and yang currencies, rather than a heterosexual combination.

Discussed increasing value of GGShares with production milestones.

Discussed initial currency price, and transitioning out of USD in basket.

Version 5.0

Reworked Introduction and Background sections

Added Conclusion section

Reworked discussion of using GGT Shares as a form of currency

Added a bit on using the value of aurum currency as initial value.

Vision added

Added glossary entries for Bracteaten and Ostraca

Fixed links