

Chapter Six

Basic Infrastructures: Money

I. What Money's For and What It Isn't

Local currencies, barter networks and mutual credit-clearing systems are a solution to a basic problem: “a world in which there is a lot of work to be done, but there is simply no money around to bring the people and the work together.”¹ One barrier to local barter currencies and crowdsourced mutual credit is a misunderstanding of the nature of money. For the alternative economy, money is not primarily a store of value, but a unit of account for facilitating exchange. Its function is not to store accumulated value from past production, but to provide liquidity to facilitate the exchange of present and future services between producers.

The distinction is a very old one, aptly summarized by Joseph Schumpeter's contrast between the “money theory of credit” and the “credit theory of money.” The former, which Schumpeter dismissed as entirely fallacious, assumes that banks “lend” money (in the sense of giving up use of it) which has been “withdrawn from previous uses by an entirely imaginary act of saving and then lent out by its owners. It is much more realistic to say that the banks 'create credit...,' than to say that they lend the deposits that have been entrusted to them.”² The credit theory of money, on the other hand, treats finances “as a clearing system that cancels claims and debts and carries forward the difference....”³

Thomas Hodgskin, criticizing the Ricardian “wage fund” theory from a perspective something like Schumpeter's credit theory of money, utterly demolished any moral basis for the creative role of the capitalist in creating a wage fund through “abstention,” and instead made the advancement of subsistence funds from *existing* production a function that workers could just as easily perform for one another through mutual credit, had the avenues of doing so not been preempted.

The only advantage of circulating capital is that by it the labourer is enabled, he being assured of his present subsistence, to direct his power to the greatest advantage. He has time to learn an art, and his labour is rendered more productive when directed by skill. Being assured of immediate subsistence, he can ascertain which, with his peculiar knowledge and acquirements, and with reference to the wants of society, is the best method of labouring, and he can labour in this manner. Unless there were this assurance there could be no continuous thought, no invention, and no knowledge but that which would be necessary for the supply of our immediate animal wants....

The labourer, the real maker of any commodity, derives this assurance from a knowledge he has that the person who set him to work will pay him, and that with the money he will be able to buy what he requires. He is not in possession of any stock of commodities. Has the person who employs and pays him such a stock? Clearly not....

...Do all the capitalists of Europe possess at this moment one week's food and clothing for all the labourers they employ?...

1 Lietaer, p. 112. [full cite]

2 *Joseph Schumpeter, History of Economic Analysis*. Edited from manuscript by Elizabeth Boody Schumpeter (New York: Oxford University Press, 1954), p. 1114.

3 *Ibid.*, p. 717.

...As far as food, drink and clothing are concerned, it is quite plain, then, that no species of labourer depends on any previously prepared stock, for in fact no such stock exists; but every species of labourer does constantly, and at all times, depend for his supplies on the co-existing labour of some other labourers.⁴

...When a capitalist therefore, who owns a brew-house and all the instruments and materials requisite for making porter, pays the actual brewers with the coin he has received for his beer, and they buy bread, while the journeymen bakers buy porter with their money wages, which is afterwards paid to the owner of the brew-house, is it not plain that the real wages of both these parties consist of the produce of the other; or that the bread made by the journeyman baker pays for the porter made by the journeyman brewer? But the same is the case with all other commodities, and labour, not capital, pays all wages....⁵

What political economy conventionally referred to as the "labor fund," and attributed to past abstention and accumulation, resulted rather from the present division of labor and the cooperative distribution of its product. "Capital" is a term for a right of property in organizing and disposing of this present labor. The same basic cooperative functions could be carried out just as easily by the workers themselves, through mutual credit. Under the present system, the capitalist monopolizes these cooperative functions, and thus appropriates the productivity gains from the social division of labor.

Betwixt him who produces food and him who produces clothing, betwixt him who makes instruments and him who uses them, in steps the capitalist, who neither makes nor uses them, and appropriates to himself the produce of both. With as niggard a hand as possible he transfers to each a part of the produce of the other, keeping to himself the large share.... While he despoils both, so completely does he exclude one from the view of the other that both believe they are indebted him for subsistence.⁶

Franz Oppenheimer made a similar argument against the wage-fund doctrine in "A Post Mortem on Cambridge Economics":

In short, the material instruments, for the most part, are not saved in a former period, but are manufactured in the same period in which they are employed....

Rodbertus, about a century ago, proved beyond doubt that almost all the "capital goods" required in production are created in the same period.... [Money capital] is not absolutely necessary for developed technique. It can be supplanted by co-operation and credit, as Marshall correctly states.... Usually, it is true, under capitalist conditions, that a certain personally-owned money capital is needed for undertakings in industry, but certainly it is never needed to the full amount the work will cost. The initial money capital of a private entrepreneur plays, as has been aptly pointed out, merely the rôle of the air chamber in the fire engine; it turns the irregular inflow of capital goods into a regular outflow.⁷

E. C. Riegel argues that issuing money is a function of the individual within the market as a side-effect of exchange. "Money can be issued only in the act of buying, and can be backed only in the act of selling. Any buyer who is also a seller is qualified to be a money issuer."⁸ Money is simply an accounting system for tracking the balance between buyers and sellers over time.⁹

4 Thomas Hodgskin, *Labour Defended Against the Claims of Capital* (New York: Augustus M. Kelley, 1969 [1825]), pp. 36-40.

5 Hodgskin, *Popular Political Economy: Four Lectures Delivered at the London Mechanics' Institution* (New York: Augustus M. Kelley, 1966 [1827]), p. 247.

6 Hodgskin, *Labour Defended*, p. 71.

7 Franz Oppenheimer, "A Post Mortem on Cambridge Economics (Part Three)," *The American Journal of Economics and Sociology*, vol. 3, no. 1 (1944), pp. 122-123, [115-124]

8 E. C. Riegel, *Private Enterprise Money: A Non-Political Money System* (1944), Introduction <<http://www.newapproachtofreedom.info/pem/introduction.html>>.

9 *Ibid.*, Chapter Seven <<http://www.newapproachtofreedom.info/pem/chapter07.html>>.

And because money is issued by the buyer, it comes into existence as a debit. The whole point of money is to create purchasing power where it did not exist before: "...[N]eed of money is a condition precedent to the issue thereof. To issue money, one must be without it, since money springs only from a debit balance on the books of the authorizing bank or central bookkeeper."¹⁰

IF MONEY is but an accounting instrument between buyers and sellers, and has no intrinsic value, why has there ever been a scarcity of it? The answer is that the producer of wealth has not been also the producer of money. He has made the mistake of leaving that to government monopoly.¹¹

In a mutual credit-clearing system, Riegel's disciple Thomas Greco argues, participating businesses *spend money into existence* by incurring debits for the purchase of goods within the system, and then earning credits to offset the debits by selling their own services within the system. The currency functions as a sort of IOU by which a participant monetizes the value of her future production.¹² It's simply an accounting system for keeping track of each member's balance:

Your purchases have been indirectly paid for with your sales, the services or labor you provided to your employer.

In actuality, everyone is both a buyer and a seller. When you sell, your account balance increases; when you buy, it decreases.

It's essentially what a checking account does.¹³ There's no reason businesses cannot maintain a mutual credit-clearing system between themselves, without the intermediary of a bank or any other third party currency or accounting institution. The businesses agree to accept each other's IOUs in return for their own goods and services, and periodically use the clearing process to settle their accounts.¹⁴

And since some of the participants run negative balances for a time, the system offers what amounts to interest-free overdraft protection. As such a system starts out, members are likely to resort to fairly frequent settlements of account, and put fairly low limits on the negative balances that can be run, as a confidence building measure. Negative balances might be paid up, and positive balances cashed out, every month or so. But as confidence increases, Greco argues, the system should ideally move toward a state of affairs where accounts are never settled, so long as negative balances are limited to some reasonable amount.

An account balance increases when a sale is made and decreases when a purchase is made. It is possible that some account balances may always be negative. That is not a problem so long as the account is actively trading and the negative balance does not exceed some appropriate limit. What is a reasonable basis for deciding that limit?... Just as banks use your income as a measure of your ability to repay a loan, it is reasonable to set maximum debit balances based on the amount of revenue flowing through an account.... [One possible rule of thumb is] that a negative account balance should not exceed an amount equivalent to three months' average sales.¹⁵

In fact, as David Graeber shows in his monumental *Debt: The First 5,000 Years*, that kind of mutual credit-clearing system, where neighbors and merchants keep running tabs and periodically settle up, was typical of medieval villages; and specie exchange did not naturally evolve from it, but was rather imposed

10 Riegel, *The New Approach to Freedom: together with Essays on the Separation of Money and State*. Edited by Spencer Heath MacCallum (San Pedro, California: The Heather Foundation, 1976), Chapter Four <<http://www.newapproachtofreedom.info/naf/chapter4.html>>.

11 Riegel, "The Money Pact, in *Ibid.* <<http://www.newapproachtofreedom.info/naf/essay1.html>>.

12 Greco, *The End of Money and the Future of Civilization* (White River Junction, Vermont: Chelsea Green Publishing, 2009), p. 82.

13 *Ibid.*, p. 102.

14 *Ibid.*, pp. 106-107

15 *Ibid.*, p. 134.

by the new absolute states of the early modern period. In the 16th and 17th century English village, for example:

Since everyone was involved in selling something..., just about everyone was both creditor and debtor; most family income took the form of promises from other families; everyone knew and kept count of what their neighbors owed one another; and every six months or year or so, communities would hold a general public “reckoning,” canceling debts out against each other in a great circle, with only those differences then remaining when all was done being settled by use of coin or goods....

In this world, trust was everything. Most money literally was trust, since most credit arrangements were handshake deals. When people used the word “credit,” they referred above all to a reputation for honesty and integrity; ...but also, reputation for generosity, decency, and good-natured sociability, were at least as important considerations when deciding whether to make a loan as were assessments of net income.¹⁶

For a credit clearing system to thrive, it must offer a valued alternative to those who lack sources of money in the conventional economy. That means it must have a large variety of participating goods and services, participating businesses must find it a valuable source of business that would not otherwise exist in the conventional economy, and unemployed and underemployed members must find it a valuable alternative for turning their skills into purchasing power they would not otherwise have. So we can expect LETS or credit clearing systems to increase in significance in periods of economic downturn, and even more so in the structural decline of the money and wage economy that is coming.

Karl Hess and David Morris cite Alan Watts' illustration of the absurdity of saying it's impossible for willing producers, faced with willing consumers, to produce for exchange because “there's not enough money going around”:

Remember the Great Depression of the Thirties? One day there was a flourishing consumer economy, with everyone on the up-and-up; and the next: poverty, unemployment and breadlines. What happened? The physical resources of the country—the brain, brawn, and raw materials—were in no way depleted, but there was a sudden absence of money, a so-called financial slump. Complex reasons for this kind of disaster can be elaborated at lengths by experts in banking and high finance who cannot see the forest for the trees. But it was just as if someone had come to work on building a house and, on the morning of the Depression, that boss had to say, “Sorry, baby, but we can't build today. No inches.” “Whaddya mean, no inches? We got wood. We got metal. We even got tape measures.” “Yeah, but you don't understand business. We been using too many inches, and there's just no more to go around.”¹⁷

The point of the mutual credit clearing system, as Greco describes it, is that two people who have goods and services to offer—but no money—are able to use their goods and services to buy other goods and services, even when there's “no money.”¹⁸ So we can expect alternative currency systems to come into play precisely at those times when people feel the lack of “inches.” Based on case studies in the WIR system and the Argentine social money movement, Greco says, “complementary currencies will take hold most easily when they are introduced into markets that are starved for exchange media.”¹⁹ The widespread proliferation of local currencies in the Depression suggests that when this condition holds, the scale of adoption will follow as a matter of course. And as we enter a new, long-term period of stagnation in the conventional economy, it seems likely that local currency systems will play a growing role in the average person's strategy for economic survival.

16 David Graeber, *Debt: The First 5,000 Years* (Brooklyn and London: Melville House, 2011), pp. 327-328.

17 Karl Hess and David Morris, *Neighborhood Power: The New Localism* (Boston: Beacon Press, 1975), pp. 154-155.

18 Greco, *The End of Money*, p. 116.

19 *Ibid.*, p. 158.

For all these reasons, the kind of “community currency” that you have to buy with conventional currency is fundamentally wrong-headed. Unfortunately, this—Berkshares are a good example—is the most visible kind of “local currency” in the media—a “buy local” campaign in which local merchants agree to accept the local currency at some modest discount compared to dollars, and one obtains the local currency by trading in U.S. dollars at participating businesses. The problem is that, to obtain this currency, you've got to already have conventional money as a store of value from past transactions. It's essentially a greenwashed lifestyle choice for the NPR liberals who have the money in the first place.

Such local currencies are basically useless for the primary purpose of a local currency: providing liquidity and a unit of account to facilitate exchange between those who have skills to trade for consumption, but no money. As Jem Bendell and Matthew Slater of the Community Forge currency system argue:

...[M]any currency innovators have chosen currency designs which initially ally themselves with the existing monetary system, such as the 'Transition Pound' initiatives in the UK. This could be because they are designed with an interest in how to market an idea to people who would choose to engage in the currency for reasons other than necessity....

Those countries that suffer a larger contraction in money supply are not interested in or able to use systems that require bank-debt to buy local currencies that in turn require charitable funding and entail additional transaction costs.²⁰

II. The Adoption of Networked Money Systems

Alternative money systems tend to be adopted in situations in which the existing currency system is wanting, like the barter networks in the United States during the Depression, Argentina in 2002 and Greece during the current Euro crisis.

Besides mostly wrong-headed local currencies of the Berkshares variety, the unemployed and underemployed in communities around the world are responding to liquidity shortages through barter networks and time banks. In Greece

[u]nemployment is up, lines of credit are strangled, invoices go unpaid, and retirements are at risk. Yet, the Greek people themselves are still ready to exploit their creativity and hard work for the common good. In the months since the real difficulty set in, some Greeks have begun to meet in the local agora to exchange goods and services directly.... Since the currency they use is dominated by dysfunction at the highest levels, people are buying and selling through barter. They're trading carpentry for tango lessons, home cooked meals for baby-sitting. The barter network in the city of Volos is one of many that allow local Greeks to achieve a measure of prosperity using their ingenuity and hard work, side-stepping the currency system that is so tied up in unbearable complexities and unsolvable problems at the international level.

The time bank, a slightly more sophisticated version of barter, is appearing in spots around the globe. A central repository keeps track of who offers what services, of how many hours they've contributed to the time bank, and how many hours they're owed.... Once an individual has earned the hours by working for someone within the network, they can then spend them on the services they choose, with the number of hours remaining being coordinated by a central "time" bank. These systems are in use all over the world, from Chicago to Paris to Moscow....

A group in Northern New England has developed a specialized time bank system that helps people pay for healthcare through their earned hours. TrueNorth, a non-profit health clinic in coastal Maine,

²⁰ Jem Bendell PhD and Matthew Slater, *Helping Sustainable Currencies to Scale: Strategic Insights from Current Practice*. 1st PUBLIC DRAFT (Version 1.0) May 14th 2012A. Non-referenced draft version of a paper to be presented at the Tesla Conference, Split, Croatia, July 10th, 2012. www.teslaconference.com. <<http://www.scribd.com/doc/93880972/Helping-Sustainable-Currencies-to-Scale>>, p. 2.

has a deal with Hour Exchange Portland by which physicians accept as payment "time dollars" that their patients accrue through service to their neighbors.²¹

In areas on the European periphery hardest hit by the Eurozone crisis, like Greece, the incentive to resort to barter currencies has been especially strong:

The first time he bought eggs, milk and jam at an outdoor market using not euros but an informal barter currency, Theodoros Mavridis, an unemployed electrician, was thrilled....

Mr. Mavridis is a co-founder of a growing network here in Volos that uses a so-called Local Alternative Unit, or TEM in Greek, to exchange goods and services — language classes, baby-sitting, computer support, home-cooked meals — and to receive discounts at some local businesses.

Part alternative currency, part barter system, part open-air market, the Volos network has grown exponentially in the past year, from 50 to 400 members. It is one of several such groups cropping up around the country, as Greeks squeezed by large wage cuts, tax increases and growing fears about whether they will continue to use the euro have looked for creative ways to cope with a radically changing economic landscape.

“Ever since the crisis there’s been a boom in such networks all over Greece,” said George Stathakis, a professor of political economy and vice chancellor of the University of Crete. In spite of the large public sector in Greece, which employs one in five workers, the country’s social services often are not up to the task of helping people in need, he added. “There are so many huge gaps that have to be filled by new kinds of networks,” he said....

The group’s concept is simple. People sign up online and get access to a database that is kind of like a members-only Craigslist. One unit of TEM is equal in value to one euro, and it can be used to exchange good and services. Members start their accounts with zero, and they accrue credit by offering goods and services. They can borrow up to 300 TEMs, but they are expected to repay the loan within a fixed period of time.

Members also receive books of vouchers of the alternative currency itself, which look like gift certificates and are printed with a special seal that makes it difficult to counterfeit. Those vouchers can be used like checks. Several businesspeople in Volos, including a veterinarian, an optician and a seamstress, accept the alternative currency in exchange for a discount on the price in euros.

A recent glimpse of the database revealed people offering guitar and English lessons, bookkeeping services, computer technical support, discounts at hairdressers and the use of their yards for parties. There is a system of ratings so that people can describe their experiences, in order to keep transparent quality control....

The group also holds a monthly open-air market that is like a cross between a garage sale and a farmers’ market, where Mr. Mavridis used his TEM credit to buy the milk, eggs and jam. Those goods came from local farmers who are also involved in the project.

“We’re still at the beginning,” said Mr. Mavridis, who lost his job as an electrician at a factory last year. In the coming months, the group hopes to have a borrowed office space where people without computers can join the network more easily, he said....

Similar initiatives have been cropping up elsewhere in Greece. In Patras, in the Peloponnese, a network called Ovolos, named after an ancient Greek means of currency, was founded in 2009 and includes a local exchange currency, a barter system and a so-called time bank, in which members swap services like medical care and language classes. The group has about 100 transactions a week, and volunteers monitor for illegal services, said Nikos Bogonikolos, the president and a founding member.²²

TEM operates on principles much like Greco's credit-clearing system.

21 Eric Garland, “The Next Money: As the Big Economies Falter, Micro-Currencies Rise,” *The Atlantic*, May 16, 2012 <<http://www.theatlantic.com/international/archive/2012/05/the-next-money-as-the-big-economies-falter-micro-currencies-rise/257216/>>.

22 Rachel Donadio, “Battered by Economic Crisis, Greeks Turn to Barter Networks,” *New York Times*, October 2, 2011 <<http://www.nytimes.com/2011/10/02/world/europe/in-greece-barter-networks-surge.html>>.

It is, in effect, a highly-organised barter economy, where members sign up online to access a database and to activate their own TEM account, which starts at zero. They then take payment for their goods and services in TEMs and use the units accrued to buy goods and services from other members. The currency, which began actively functioning in mid-2010, is also backed by a voucher system resembling a chequebook.

To ensure TEMs circulate as a viable currency, there are hard and fast rules: no one may hoard more than 1,200 TEMs in their account; no one may owe more than 300. One TEM unit is equal to one euro.

Each Saturday, the TEM-using faction of Volos gathers at a large new central market venue donated by the local university. There they trade and haggle over a sprawling selection of goods. It is half car-boot sale, half farmers' market. And euros are rarely seen.²³

Representatives of the Community Forge currency system, also based on the Greco model, describe it as

a form of mutual credit, where everyone can issue or earn credit, without the need for a loan from a bank. Everyone can exchange as much as they wish, without it being restricted by availability of Euros, and everyone ends up returning to zero, so no one makes money out of issuing the currency or charging interest. The mayor of Volos supports the project and thinks it can co-exist with the Euro.²⁴

By March 2012 Volos' TEM system had doubled to 800 members, reaching 1300 in January 2013. A member, Maria Choupis, summarized the significance of the system in language that applies just as well to the philosophy behind any well-designed alternative currency:

"You are not poor when you have no money," she said, "you are poor when you have nothing to offer – except for the elderly and the sick, to whom we should all be offering."²⁵

Small businesses are staying solvent by distributing their goods through no-middlemen networks instead of the former distribution networks of wholesalers and retailers. Savvas Mavromatis, a small detergent manufacturer in Alonia, credits such a non-profit collective—despite the fierce anti-capitalist rhetoric of the organizers who approached him—with saving his family business.²⁶

In Spain, in the face of skyrocketing unemployment rates since the 2007 market collapse (53% for 16- to 24-year-olds, 27% for 25- to 35-year-olds), the unemployed and underemployed have turned to assorted barter arrangements in the informal economy in order to survive outside the wage system. Such arrangements include time banks, of which some 290 existed in Spain as of August 2012.

In the Catalonia region, several businesses and town governments have started accepting an invented currency—the Eco—that is backed by hours of labor. Individuals are trading cooking lessons and fresh produce for car rides and legal services. While time banks may not be a permanent solution to the stability of the Spanish economy, they can provide the jobless with a way to sustain themselves.²⁷

Psychologist Angels Corcoles recently taught a seminar about self-empowerment for women, and when she finished the organizers handed her a check with her fee. The amount was in hours, not euros.

23 Georgios Makkas, "No Euros? No Problem," *Athens News*, June 19, 2012 <<http://www.athensnews.gr/issue/13500/56321>>.

24 Bendell and Slater, *op. cit.*, p. 2.

25 John Henley, "Greece on the breadline: cashless currency takes off," *The Guardian*, March 16, 2012 <<http://www.guardian.co.uk/world/2012/mar/16/greece-on-breadline-cashless-currency>>; Helena Smith, "Euros discarded as impoverished Greeks resort to bartering," *The Guardian*, January 2, 2003 <<http://www.guardian.co.uk/world/2013/jan/02/euro-greece-barter-poverty-crisis>>.

26 Andrew Higgins, "After Crisis, Greeks Work to Promote 'Social' Economy," *New York Times*, January 28, 2014 <<http://www.nytimes.com/2014/01/29/world/europe/after-crisis-greeks-work-to-promote-social-economy.html>>.

27 Orion Jones, "Unemployment in Spain Leads to the Creation of New Currencies," *Big Think*, August 27, 2012 <<http://bigthink.com/ideafeed/unemployment-in-spain-leads-to-the-creation-of-new-currencies>>.

But Corcoles didn't mind. Through a citywide credit network that allows people to trade services without money, the 10 hours Corcoles earned could be used to pay for a haircut, yoga classes or even carpentry work.

At a time when the future of the euro is in doubt and millions are unemployed or underemployed with little cash to spare, a parallel economy is springing up in parts of Spain, allowing people to live outside the single currency.

In the city of Malaga, on the country's southern Mediterranean coast just 80 miles from Africa, residents have set up an online site that allows them to earn money and buy products using a virtual currency. The Catalan fishing town of Vilanova i la Geltru has launched a similar experiment but with a paper credit card of sorts. It implements a new currency worth slightly more than the euro when it is used at local stores.

In Barcelona, the country's second-largest city after Madrid, the preferred model is time banks, which allow people to trade their services in hours without the involvement of money.

"This is a way for people who are on the fringes of the economy to participate again," said Josefina Altes, coordinator of the Spanish Time Bank Network.²⁸

Informal banking systems, similarly, become most important in those areas where the official financial system is least effective in providing liquidity for exchange between ordinary people. In the informal settlement of Bangladesh, Kenya, the Bangla Pesa barter currency system is organized according to Greco's credit-clearing architecture.

Bangla-Pesa is a program to strengthen and stabilize the economy of the informal settlement of Bangladesh, Kenya by organizing its more than 200 small scale businesses into a Bangla Business Network (BBN) through which its members can utilize a complementary currency to mediate trades. The *Bangla-Pesa* is a unit of credit within this mutual-credit-clearing (or multilateral reciprocal exchange) system which provides a means of payment that is complementary to official money.

As such, it helps to stabilize the community in the face of monetary volatility by allowing Network members to trade with each other without using the national currency.... The BBN launched the Bangla-Pesa currency in May 2013. Credits are issued in the form of paper-vouchers that can pass from hand to hand as payment for goods and services. Toward the end of 2013, we hope to add the capability of using mobile phone technology....

Once accepted into the Network through a process of finding four guaranteeing, each business is allocated a credit line in Bangla-Pesa. The businesses also pay a membership fee to the network in Bangla-Pesa, which is used for administration, marketing and community programs. By using the Bangla-Pesa to buy goods and services at fellow BBN member businesses, they also accept to sell their own goods and services for Bangla-Pesa. The amount of Bangla-Pesa in circulation is determined by the membership and targeted using baseline data, at an amount usable for daily transactions. This currency forms a buffer against fluctuations in the money supply due to remittances, weather, holidays, sending children to school, political turmoil and so on.²⁹

III. Examples of Networked Money Systems.

There are a number of competing digital complementary currency systems, most of them providing networked currency platforms on something resembling Greco's principles: among them Community Exchange Systems, Community Forge and Ripple.

28 Ariana Eunjung Cha, "In Spain, financial crisis feeds expansion of a parallel, euro-free economy," *Washington Post*, August 27, 2012 <http://www.washingtonpost.com/business/economy/in-spain-financial-crisis-feeds-expansion-of-a-parallel-euro-free-economy/2012/08/27/53ed3552-e00f-11e1-a19c-fcfa365396c8_story.html>.

29 "Bangla Pesa - Complementary Currency Program," *Koru Kenya* <<http://koru.or.ke/bangla>> Accessed May 24, 2013.

Community Exchange System. CES³⁰ was developed in 2002 and has three hundred participating communities.³¹

Unlike the conventional money-based exchange system, the CES has no physical currency. The idea that such a currency is required before any trading can take place is an ancient one and increasingly irrelevant in this day and age of computers and the Internet. Information can replace currencies and at the same time eliminate most of the problems associated with regular money....

As the 'currency'... is information it does not have to be 'created' like conventional money so there is no need for an issuing authority or for a supply of it, and none is required to start trading. 'Money' in these systems is a retrospective 'score-keeping' that keeps a record of who did what for whom and who sold what to whom. There can never be a shortage of information as there can be of money, as information does not have to be created and limited by a third party (banks or government) in order to give it value. For this reason the concepts of borrowing, lending and interest are meaningless in the CES....

CES exchanges compile and distribute a directory of goods and services offered by the users registered with them, as well as a list of their 'wants' or requirements. When a user requires something advertised in the directory the seller is contacted and the trade takes place.... Sales are recorded as credits for sellers and as debits for buyers. The central book-keeping system records the relative trading positions of the traders. Those in credit can claim from the community goods and services to the value of their credit and those in debit owe the community goods and services to the value of their debit. Traders receive a regular statement of account that lists their trades and gives their balance at the end of the period. Information about the trading position of others prevents unscrupulous buyers from exploiting the system.³²

As with Greco's system, there is no need to accumulate a store of value from past exchange before one can participate in the system. One's account simply tracks the net balance of exchanges to date.

CES money "is abundant and can never be in short supply"; hence "It bridges the 'money gap' between the skills/offers/talents/gifts of sellers on the one hand and the wants/needs/requirements of buyers on the other. Conventional money usually can't bridge this gap because its supply is limited or non-existent."³³

Drupal and Community Forge. Drupal, the open-source content management system, can also serve as the architecture for a wide range of alternative currency systems.

- Community Accounting
- Complementary Currencies
- Virtual Currencies
- Community Exchange
- Time Banking
- Community Currencies
- Credit Unions

An all-embracing and flexible package which includes a mutual credit ledger, super-configurable transaction forms and displays, including several views and blocks. It can be used as a digital back-end for paper money projects, or to run an entire LETS, Timebank, or several in parallel. With a little tweaking, it can manage currencies conforming to a wide range of designs. Autopayments can be done with a little glue code....³⁴

To take one example, Community Forge is a local currency system based on the Drupal architecture.

30 <<http://www.ces.org.za/>>.

31 "Compare with CES and Community Tools" Accessed November 15, 2011 <<http://communityforge.net/compare>>.

32 "What is the CES?" Accessed November 15, 2011 <<http://www.ces.org.za/docs/whatces.htm>>.

33 "Advantages of the CES" Accessed November 15, 2011 <<http://www.ces.org.za/docs/advantages.htm>>.

34 matslats, "Community Accounting, *Drupal*, September 7, 2009 <http://drupal.org/project/mutual_credit>.

Starting with a LETS architecture coded into the Drupal platform, CommunityForge aims to deliver its web solution as many LETS communities with transaction-enabled social networking web sites. With a membership base, it will seek to devolve power and skills while providing more and better tools to more local communities seeking to strengthen and build resilience.

By offering economic tools, to enable real-world and virtual communities to declare their own localised currencies, and to trade in them using open source software, thus building a more sustainable economy for the 21st century.

Its purpose, as described in the Community Forge Mission Statement, is “to Make Community Currencies Ubiquitous.”

1. to enable communities to use mutual credit currencies as part of a larger localisation movement
2. to campaign and educate for interest free money
3. to concentrate expertise and foster experimentation in CC design³⁵

As described by the Community Forge project, CF is of special value because it's designed to be scalable and modular:

Our software, based on Drupal, is the only community currency trading software built on a social networking platform. That means thousands of software developers can set up similar sites, and many of them could easily modify the software. As a popular open source project, the code is very high quality and continually improving. And we take a more holistic view in terms of building up a community of users who can support each other.³⁶

CF is two years old, and has some fifty communities participating.³⁷ Jim Bendell and Matthew Slater describe its principles—and its prospects for the future—at greater length:

At Community Forge we seek to solve the dual problem that i) there are not enough sustainable currencies widely available for daily exchange, and that ii) there has been minimal support from institutionalised powers in government, business or civil society, for creating sustainable currency systems.

We are deploying mutual credit systems because they do not require support in order to begin (problem ii) and they have a number of advantages as a sustainable currency (problem i), including the way they address the following related needs:

- they help match underused assets with unmet needs, to the degree that people want, not to the degree that there is money around to complete a transaction. This helps to address the problem where people stand idle, as unemployed, and assets stand idle, while needs exist or grow within society.
- they involve all credits and debits ultimately cancelling each other out, you don't find increasing amounts of money chasing the same amount of stuff or services, so the currency doesn't inflate. This helps to address the problem where currency loses its value and thus makes the elderly on low incomes more vulnerable.
- there is no interest charged upon the issuing of credit, so wealth isn't extracted from those with lower incomes. This helps address the problem of growing economic inequality and reduced social mobility.
- they are often locally-focused, they encourage us to trade locally, so reducing our carbon footprint and build economic resilience
- they do not require backing, beyond the soft infrastructures to produce credibility, so there is no need for start-up capital, and thus no extraction of wealth by lenders or investors. In addition, as an accounting currency, there is also nothing to steal....³⁸

35 “Our Story,” *CommunityForge.net*. Accessed November 15, 2011 <<http://communityforge.net/our-story>>.

36 “What's so special about CommunityForge's service?” Accessed November 15, 2011 <<http://communityforge.net/node/233>>.

37 “Compare with CES and Community Tools” Accessed November 15, 2011 <<http://communityforge.net/compare>>.

38 Bendell and Slater, *op. cit.*, pp. 3-4.

Many Local Exchange Trading (LETS) groups in France and Switzerland use our software and services. A cluster of LETS in Belgium has committed to our software for three years now, they are expert users and can run it largely without us now. We are networking their mutual credit circles together so they can trade between circles. <http://www.communityforge.net>

We are working with the Common Good Bank in the USA to make an SMS interface for our software. <http://commongoodbank.com/>

We are working with the Hub network to develop a combined mutual credit/reputation system to encourage freelancers to collaborate better together. <http://www.the-hub.net/>

When Transition towns produce a community site for each town, we shall offer an optional marketplace component, working with communitytools.info

We are engaged with Timebanks in UK and Turkey as they experiment with ways to become more sustainable through business participation. zumbara.com

We are striving to provide an affordable rebuild for Community Exchange Systems (CES) whose software is ageing. www.ces.org.za

Through participation in initiatives like The Finance Innovation Lab, The Rebuild 21 Conference, TEDx Transmedia, Future Perfect, European Academy of Business and Society, Global Ethics Forum and World Economic Forum, we articulate our analysis and work to wider audiences.³⁹

...We are not dogmatic about currency design, but we have some experience at the same time, and we are happy to witness a wide diversity of approaches. So we are one step removed from the coal face where transactions actually happen, and our impact is felt across a large proto-network. We are networking all the community exchanges we host, because our users absolutely need the benefits described by Metcalfe's law, which states that networks become exponentially more useful as they grow.... We believe that a new culture of sustainable businesses is emerging and that we can help them to flourish by providing non-money accounting systems.⁴⁰

Ripple. As the Ripple website points out, a trust-based local currency performs exactly the same function your checking account does. J.P. Koning calls it “Bills of Exchange 2.0.” Every time you write a check, you're giving a merchant an IOU backed by the merchant's faith in the bank's ability to make it good.

Money as we know it is made from promises, specifically bank promises, in the form of bank account balances. Ripple's goal is to make your promises as useful for paying people as bank promises are.

To start with, let's look at what happens if you tried to use your own promise as money. Suppose you went to the store and tried to pay with an IOU. This might work, except for two things:

1. The store owner may not know you are trustworthy.
2. Even if the owner trusts you, many others don't, so she can't use your IOU to buy things.

Ripple solves the first problem by finding one or more people who can exchange your IOU for one issued by someone the store owner trusts. For example, if the store owner trusts your friend Alice, and Alice trusts you, you can give your IOU to Alice, and Alice can give her IOU to the owner. This can all happen instantly over the internet.

The cool thing now is that the store owner can actually use Alice's IOU to buy things, because Ripple can convert it into IOUs that are useful for paying other people. That solves the second problem.⁴¹

Koning explains his “Bills of Exchange” comparison:

Ripple is (perhaps unintentionally) replicating the bills of exchange system by allowing individuals to emit their own highly liquid IOUs. Ripple users build a list of contacts whose credit they trust and indi-

39 *Ibid.*, p. 5.

40 *Ibid.*, p. 6.

41 J.P. Koning, “Ripple, or Bills of Exchange 2.0,” *Moneyness*, February 19, 2013 <<http://jpkoning.blogspot.com/2013/02/ripple-or-bills-of-exchange-20.html>>; “RippleWiki/Main” Accessed November 15, 2011 <<http://ripple-project.org/>>.

cate their degree of trust by stipulating how much of an issuer's IOUs they are willing to accept and in what denominations. Once they receive those IOUs in payment, the IOU might be settled in underlying settlement media (say bitcoin or dollars) and canceled. Alternatively, Ripple users are free to exchange these IOUs on to anyone else who accepts the issuer's credit. Finally, when two people owe each other an equivalent IOU, they can simply net out the transaction and cancel both promises.

Webs of trust allow Ripple transactors with no direct personal contact to transact with each other via the chain of trusted credit-granting intermediaries that stand in between them.... Rather than using a bank, the transaction can be consummated through a distributed network of friends and acquaintances.⁴²

“What Ripple does,” Stanislaus Jourdan says, “is enhance P2P payment systems based on already existent social networks by turning them into trust networks and transaction pathways.”⁴³

Bitcoin. The basic idea of Bitcoin, as described by Brett Scott, is that it open-sources the banks' monopoly on recording transaction data.

Banks are information intermediaries.... Nowadays, if you have ‘£350 in the bank’, it merely means the bank has recorded that for you in their data centre, on a database that has your account number and a corresponding entry saying ‘350’ next to it. If you want to pay someone electronically, you essentially send a message to your bank, identifying yourself via a pin or card number, asking them to change that entry in their database and to inform the recipient’s bank to do the same with the recipient’s account.

Thus, commercial banks collectively act as a cartel controlling the recording of transaction data.... To create a secure electronic currency system that does not rely on these banks thus requires three interacting elements. Firstly, one needs to replace the private databases that are controlled by them. Secondly, one needs to provide a way for people to change the information on that database (‘move money around’). Thirdly, one needs to convince people that the units being moved around are worth something.

To solve the first element, Bitcoin provides a public database, or ledger, that is referred to reverently as the *blockchain*. There is a way for people to submit information for recording in the ledger, but once it gets recorded, it cannot be edited in hindsight....

Secondly, Bitcoin has a process for individuals to identify themselves in order to submit transactions to those clerks to be recorded on that ledger. That is where public-key cryptography comes in. I have a public Bitcoin address (somewhat akin to my account number at a bank) and I then control that public address with a private key (a bit like I use my private pin number to associate myself with my bank account). This is what provides anonymity.

The result of these two elements, when put together, is the ability for anonymous individuals to record transactions between their bitcoin accounts on a database that is held and secured by a decentralised network of techno-clerks (‘miners’). As for the third element – convincing people that the units being transacted are worth something – that is a more subtle question entirely that I will not address here.⁴⁴

But the third question entails the biggest shortcoming of Bitcoin, from a community currency standpoint: it serves more as a store of value than simply recording debits and credits. Its quantity is fixed beyond a certain point, which means that individual units will appreciate in value as people come into the system. That is, it's deflationary. From the design perspective of traditional alternative currency systems, that's a serious bug. Deflation means people will hoard it rather than keep it in circulation.⁴⁵ Most LETS systems have a

42 Koning, *op. cit.*

43 Stanislaus Jourdan, “Game over, Bitcoin. Where is the next human-based digital currency?” *Ouishare*, May 21, 2013 <<http://ouishare.net/2013/05/bitcoin-human-based-digital-currency/>>.

44 Brett Scott, “Visions of a Techno-Leviathan: The Politics of the Bitcoin Blockchain,” *E-International Relations*, June 1, 2014 <<http://www.e-ir.info/2014/06/01/visions-of-a-techno-leviathan-the-politics-of-the-bitcoin-blockchain/>>.

45 Sebastiano Scrofina, “Scrofina's answer to Bitcoin: If one were to make a competitor to Bitcoin, what features would be desirable?” *Quora*, June 15, 2011 <<http://www.quora.com/Bitcoin/If-one-were-to-make-a-competitor-to-Bitcoin-what-features-would-be-desirable/answer/Sebastiano-Scr%C3%B2fina?srid=uLs>>.

tendency toward hoarding because the range of good and service providers participating in them means the average member can only meet an unsatisfactory portion of her total needs through the system, and has left-over notes with nothing to spend them on. Silvio Gesell built demurrage into his currency system—i.e., it lost value over time—as an incentive to spend it rather than hoard it, and overcome the deflation and idle capacity of the larger economy.

So Bitcoin functions like a typical commodity or specie currency, and tends to promote speculation and the concentration of wealth into a few hands. Community Forge co-founder Matthew Slater notes:

Complementary currency activists have been stupified as bitcoin came from ‘nowhere’, gained huge media attention, reached a market capitalisation of \$1bn, and is now attracting investors and entrepreneurs and becoming established. Bitcoin serves libertarian purposes by evading central bank controls, but... it increasingly resembles the old system. Some of us understand that any commodity currency serves the interests of the wealthy....⁴⁶

According to Michel Bauwens of the Foundation for Peet-to-Peer Alternatives, “Bitcoin is designed by people who believe in a certain type of economy, it is designed to be like gold, privileging hoarding.”

Bitcoin can be described as a deflationary currency, or even a mere (virtual) commodity. Like gold, bitcoins are valuable because of their scarcity—Bitcoin’s money supply is limited to 21 million of units. A feature, according to libertarians and gold standard advocates, yet a bug for many...

Another way to put it: since bitcoin units are being created at an increasingly slower pace while more and more users join the currency, the value of each unit can only rise. Thereby, new entrants only have a smaller share of the Bitcoin monetary mass — unless they are rich enough to buy more bitcoin against official foreign currencies.

“Bitcoin is about creating asymmetry and inequality where there is none,” concludes Financial Times’ journalist Izabella Kaminska, “It’s a system designed to create bitcoin millionaires.

Those Bitcoin millionaires are not a myth. ...[R]esearchers Dorit Ron and Adi Shamir have found very insightful results. First, they estimated that 59.7% of the Bitcoin coins are dormant, which means the majority of the coins are saved rather than spent in the system. Second and more interesting, they found that 97% of Bitcoin accounts contain less than 10 bitcoins, while a handful of 78 entities are hoarding more than 10,000 Bitcoins...

So basically you have a group of happy few people controlling the vast majority of all Bitcoins. But who could these guys be? Well, some further research led by Sergio Lerner suggests that one of those bitcoin millionaires is the mysterious Satoshi Nakamoto, the alleged inventor of Bitcoin. Since Nakamoto was most certainly the first Bitcoin user to make a transaction, Lerner could trace all of his account’s activity and found that he must own about 980K Bitcoins, which equal about 110 million dollars with today’s exchange rate...

Michel Bauwens — whose institution, the P2P Foundation made use of Bitcoin very early — has also sensibly withdrawn his support of the digital currency and expressed strong criticism during a talk at OuiShare Fest in May 2013. But contrary to Varoufakis, he remains optimistic:

Thank you Bitcoin for doing this, because now we can do something better — Michel Bauwens, P2P Foundation...

At a panel at OuiShare Fest on Virtual Currencies, everyone agreed on the principle that next currencies should be based on trust, and help the real economy. But where to start?

“We need to dismantle the idea that money should be a commodity, a store of value” Dropis’ Scò-fina says.⁴⁷

46 Michel Bauwens, “An update on the interoperability of complementary currency software systems,” *P2P Foundation Blog*, August 22, 2013 <<http://blog.p2pfoundation.net/an-update-on-the-interoperability-of-complementary-currency-software-systems/2013/08/22>>.

47 Stanislaus Jourdan, op. cit.

And because the money is created by a third party rather than by the very act of spending it, it doesn't solve the problem of liquidity for those who lack conventional money.

Bitcoin wealth is so concentrated as to cause even Thomas Piketty to stagger. Over half of all Bitcoins are owned by one tenth of a percent of all Bitcoin accounts.⁴⁸ And in June 2014 a single entity for the first time acquired 51% of total computing power used for mining Bitcoins for substantial periods of time.⁴⁹

Nevertheless, Bitcoin created by far the biggest splash of any alternative with its appearance in the mainstream media in 2011. The moral panic surrounding Silk Road made it front page news for people who'd never heard of encrypted currencies. Rick Falkvinge, the gray eminence of The Pirate Bay, described Bitcoin as "the Napster of Banking." Despite its technical shortcomings, its innovations in peer-to-peer architecture and its sheer impact on public awareness made it the forerunner of whatever encrypted currency system winds up taking over the ecosystem.

One general rule of technical advancement is that it's not necessarily the most feature rich variant of a new technology that reaches the tipping point and critical mass, or even the cheapest or most available: rather, it tends to be the easiest to use....

History so far tells us that it takes about ten years from conception of a technology, or an application of technology, until somebody hits the magic recipe in how to make that technology easy enough to use that it catches on. And when it does, boy, does it catch on....

It took ten years for music sharing to become easy enough to wildfire, courtesy of Napster. It took video sharing ten years to become easy enough to wildfire.

So if you want a crystal ball of the next battle, look at what many techies are doing right now, but that is obscure and hasn't caught on; something that has a very clear and attractive use case once it becomes easy enough.

Here's what's on my radar: banking. There's at least a dozen different variants of decentralized cryptographic currencies and transaction systems out there, very sophisticated and totally incomprehensible. There's Ripple, BitCoin, ecash and others.

Just as BitTorrent made the copyright industry obsolete in the blink of an eye, these stand to make banks obsolete. These, or their successor, will hit a tipping point as soon as somebody makes it easy enough to use. The technology is there, the use case is there—there's certainly no shortage of annoyance with big banking. It's just a matter of usability now.

When this tipping point happens, there won't be any central point of control over economies. It will be like everybody traded in cash, traditional anonymous cash, once again....

Imagine the ramifications of that for a moment. The governments of the world are on the brink of losing the ability to look into the economy of their citizens. They stand to lose the ability to seize assets, they stand to lose the ability to collect debts. No application of force in the world is going to help: everything is encrypted, and destroying a computer with any amount of police firepower will accomplish zilch....

If you thought the wars over knowledge and culture were intense, I believe we'll see much more interesting events unfold in the coming decade....⁵⁰

Chris Pinchen, likewise, sees Bitcoin as a harbinger of future developments at a time when existing governance mechanisms—states and corporations—are crumbling from within. The crypto-currency movement

48 Michel Bauwens, "In the Bitcoin world, half the wealth belongs to the 0.1 percent," P2P Foundation Blog, May 22, 2014 <<http://blog.p2pfoundation.net/in-the-bitcoin-world-half-the-wealth-belongs-to-the-0-1-percent/2014/05/22>>.

49 Bauwens, "The end of Bitcoin's decentralization promise: monopoly of Bitcoin's total computational power," P2P Foundation Blog, June 17, 2014 <<http://blog.p2pfoundation.net/the-end-of-bitcoins-decentralization-promise-monopoly-of-bitcoins-total-computational-power/2014/06/17>>.

50 Rick Falkvinge, "With the Napster of Banking Round the Corner, Bring Out Your Popcorn," *Falkvinge & Co. on Infopolicy*, May 11, 2011 <<http://falkvinge.net/2011/05/11/with-the-napster-of-banking-round-the-corner-bring-out-your-popcorn/>>.

is significant because it is a vanguard phenomenon. It is a cross-over species that is pioneering a transition from the current socio-economic order of bureaucratic states, grounded in rigid hierarchies, rule-sets and territorial control, to a new order that more resembles an ecosystem whose governance institutions are based on peer to peer social relations that co-evolve within a global socio-technological framework.

...Bitcoin is very likely the first in a series of real world experiments in new forms of trustworthy digital institutions that will challenge the sovereignty and governance power of states. These new institutions may even come to supplant traditional, physical democratic institutions because of their inherent efficiencies, versatility, stability and safeguards against corruption.⁵¹

Bitcoin's encryption, combined with a p2p architecture which frees it from dependence on a central server network, makes it extremely opaque to “the authorities.” Moral scolds like Sen. Charles Schumer went ballistic at news that Bitcoin was being used as a medium of exchange in black market venues like Silk Road for purchasing illegal drugs. But as usual, their outraged squawking about the goings-on in the Intertubes far exceeded their actual power to do anything about it.

Unlike other currencies, Bitcoin uses a peer-to-peer technology to manage transactions and validate payments. Since no bank is involved, purchases don't leave a paper trail for law enforcement agencies to track criminal activity.

“The only method of payment for these illegal purchases is an untraceable peer-to-peer currency known as Bitcoins. After purchasing Bitcoins through an exchange, a user can create an account on Silk Road and start purchasing illegal drugs from individuals around the world and have them delivered to their homes within days,” the senators wrote....

However, finding black markets like Silk Road that promote the use of Bitcoin won't be easy. The only lead investigators have is tracking transaction patterns that may suggest the exchange of real money for Bitcoin, according to the report.⁵²

Bitcoin is vulnerable at its real-world interface with the official currency, as shown by the hacking of the largest Bitcoin currency exchange, Mt. Gox. As with the suppression of Napster, Bitcoin users responded with Dark Exchange, “a distributed p2p exchange for bitcoin.”⁵³

As reported by the *Gawker* article which Cheredar cites, law enforcement actually does have some tools despite the end-to-end encryption of the Bitcoin architecture itself.

Jeff Garzik, a member of the Bitcoin core development team, says in an email that bitcoin is not as anonymous as the denizens of Silk Road would like to believe. He explains that because all Bitcoin transactions are recorded in a public log, though the identities of all the parties are anonymous, law enforcement could use sophisticated network analysis techniques to parse the transaction flow and track down individual Bitcoin users.

“Attempting major illicit transactions with bitcoin, given existing statistical analysis techniques deployed in the field by law enforcement, is pretty damned dumb,” he says.⁵⁴

Timothy B. Lee explains, in greater detail, the vulnerability of Bitcoin where its encrypted architecture intersects with the non-encrypted world:

Remember, people want money so they can buy stuff. There are a few goods and services, like pornography or consulting work, that can be delivered entirely over the Internet. But people mostly buy prod-

51 Chris Pinchen, “Why Bitcoin is a Foundational Change That Won't Go Away—and Could Change Everything,” *P2P Foundation*, November 26, 2011 <<http://blog.p2pfoundation.net/why-bitcoin-is-a-foundational-change-that-won%E2%80%99t-go-away-and-could-change-everything/2011/11/26>>.

52 Tom Cheredar, “Forget piracy, U.S. government is going after Bitcoin,” *VentureBeat*, June 8, 2011 <<http://venturebeat.com/2011/06/08/government-crackdown-on-bitcoin/>>.

53 <<https://github.com/macourtney/Dark-Exchange>>.

54 Adrien Chen, “The Underground Website Where You Can Buy Any Drug Imaginable,” *Gawker*, June 1, 2011 <<http://gawker.com/5805928/the-underground-website-where-you-can-buy-any-drug-imaginable>>.

ucts that need to be physically delivered. An American who wants to deal primarily in Bitcoins will, at some point, need to either buy food and shelter in Bitcoins or convert some of their Bitcoins to dollars. And that means making Bitcoin payments to people in the US.

But the US government could easily require any business accepting Bitcoin payments (or converting Bitcoins to dollars) to collect identification information from their customers in the same way that “know your customer” regulations require financial institutions to collect information about their customers. And once the government has de-anonymized a significant fraction of the addresses on the network, they’ll be able to infer many of the others using basic detective work. Remember, the full pattern of transactions is a matter of public record. Officials trying to identify a particular address will have a complete record of every address that’s ever sent money to, or received money from, that address. If any of them are within the United States, they can be compelled to disclose details (IP addresses, shipping addresses, contact email address, etc) that could help identify the address’s owner.

Now this isn’t to say that a determined individual couldn’t use Bitcoin in a way that preserves his privacy. But it would either require a high level of technical savvy or significant lifestyle changes. He could avoid working for traditional US employers and buying things from mainstream US businesses. But most users just don’t care about privacy enough to make those kinds of major lifestyle changes to get it.

Another approach would be to use technical means to obfuscate the flow of funds to and from his accounts. He could route all Bitcoin traffic through an anonymization service like Tor. He could create a large number of decoy accounts and have different people pay different accounts. There could even be Bitcoin “money laundering” services that accept money from you and pay you back in another account. But few people have the patience or technical know-how to do this effectively.

Moreover, people willing to go to that much trouble can obtain roughly the same degree of financial privacy using dollars. Most obviously, you can conduct transactions in cash, which is inherently resistant to government surveillance. For remote transactions, there are any number of offshore intermediaries in Switzerland, the Cayman Islands, and elsewhere that have been helping privacy-conscious Americans stay beyond the long arm of the law for decades. And all of these transactions have an important advantage over Bitcoin: they don’t produce public entries in a global distributed database.⁵⁵

But Thomas Lowenthal, at *Active Rhetoric*, argues that automated user interfaces in future upgrades of Bitcoin will enable average users to take the obfuscation and laundering countermeasures described by Lee without it *being* “that much trouble.”⁵⁶

After all this back-and-forth, perhaps the best conclusion we can come up with is that an encrypted currency like Bitcoin would work best when coupled with another trust network like a phyle, whose members have been vetted for trustworthiness.

Bitcoin has made significant mainstream in-roads, being accepted by a growing number of online retailers and service providers, and attempting to compete with PayPal as an online payment option.⁵⁷ But in the meantime, warnings about its security as a black market currency came true with a vengeance. In October 2013 the Bitcoin world was rocked by news that the U.S. government had shut down Silk Road.

As my colleague at Center for a Stateless Society, Charles Johnson, said: “It looks like Silk Road is going to be the Napster of online black markets. Now the question is, who’s going to become the BitTorrent?”⁵⁸ The Napster comparison was fairly common. Bitalik Buterin wrote:

55 Timothy B. Lee, “How Private Are Bitcoin Transactions?” *Forbes*, July 14, 2011 <<http://www.forbes.com/sites/timothylee/2011/07/14/how-private-are-bitcoin-transactions/>>.

56 Thomas Lowenthal, “Bitcoin: More Covert than it Looks,” *Active Rhetoric*, July 14, 2011 <<http://activerhetoric.wordpress.com/2011/07/14/bitcoin-more-covert-than-it-looks/>>.

57 Nicolas Mendoza, “Bitcoin Rises,” *Al Jazeera English*, March 13, 2013 <<http://www.aljazeera.com/indepth/opinion/2013/03/2013391325331795.html>>; Falkvinge, “Why Expensify Endorsing Bitcoin is a Really Big Deal: Social Virality,” *Falkvinge on Infopolicy*, March 28, 2013 <<http://falkvinge.net/2013/03/28/why-expensify-endorsing-bitcoin-is-a-really-big-deal-social-virality/>>.

58 Private email, October 2, 2013.

Research into infrastructure like decentralized webs of trust is likely to increase; just like the successor to Napster was the decentralized BitTorrent, the true successor to Silk Road will likely need to be decentralized as well. Will it happen? The tools are out there..... The next level will be to set up a decentralized marketplace. That is simply a matter of creating a simple application-specific message protocol on top of BitMessage and then creating a graphical user interface for it. The web of trust, necessary to combat fraud, will also need to become a decentralized protocol. If someone wants to implement it all, they can.⁵⁹

In fact Silk Road 2.0 opened on November 6, 2013, run by members of the original Silk Road community (including an anonymous leader, who took on Ulbricht's name "Dread Pirate Roberts").⁶⁰ And by May 2014, it was operating on a larger scale than the original Silk Road.⁶¹ Silk Road 2.0 was shut down in its turn, and succeeded by Silk Road Reloaded which launched in January 2015. It is reportedly more resilient against surveillance, first because it accepts a wide array of blockchain currencies rather than just Bitcoin, and second because instead of Tor it relies on the I2p darknet.⁶²

Two other developments relevant to the security of encrypted currency based on the Bitcoin architecture are Dark Wallet, a secure encrypted Bitcoin wallet developed by Cody Wilson (famous for developing the world's first 3D-printed gun⁶³, and Darkcoin, a Bitcoin knockoff that ties together each transaction with transactions by two other random users, and thus makes it far more difficult to deduce actual identities from a blockchain's history.⁶⁴

But far more important than questions of security and opacity to the state is the question, which we raised at the outset, of Bitcoin's functional role as a store of value or specie-mimic. So if neither party to a transaction has Bitcoins from past transactions, or that they've bought with official currency, there is no source of liquidity for an exchange of services between them. Because Bitcoin isn't generated by the act of exchange itself, it's useless for the purpose served by traditional alternative currencies. The only thing it's good for, over and above conventional currency, is payments where confidentiality is at a premium:

"At the moment there is no need to use Bitcoin, as anything that can be bought for BTC can be bought for 'real money' elsewhere," a Redditor writes. "Love it or hate it, Silkroad is the one example of Bitcoin actually being used as it was designed."⁶⁵

In other words, Bitcoin is good for black marketeers who need an anonymous medium of exchange—and there's certainly nothing wrong with that!—and for secure, anonymous exchange between local trust networks. But it's maladapted to the primary purpose of an alternative currency: to provide liquidity for exchange between people in a local economy who need a way to transform their services into purchasing power in a stagnant economic environment where there's "no money."

Matt Slater observes that disintermediating banks is not enough; so long as it retains its essence as a commodity, money will always be manipulated and hoarded by the rich. What's needed, above and beyond disintermediation, is zero-interest, peer-to-peer credit money—ideally based on blockchain technology and

59 Vitalik Buterin, "Silk Road Shut Down, Alleged Owner Arrested," *Bitcoin Magazine*, October 2, 2013 <<http://bitcoinmagazine.com/7362/silk-road-shut-down-alleged-owner-arrested/>>.

60 Joseph Cox, "Good News, Drug Users – Silk Road is Back!" *Vice*, November 6, 2013 <<http://www.vice.com/read/good-news-drug-users—silk-road-is-back>>.

61 Mike Masnick, "Silk Road 2.0 Now Larger Than Silk Road Ever Was," *Techdirt*, May 6, 2014 <<https://www.techdirt.com/articles/20140501/18550127094/silk-road-20-now-larger-than-silk-road-ever-was.shtml>>.

62 Darren Orf, "Silk Road Reloaded Ditches Tor for a More Anonymous Network," *Gizmodo*, January 11, 2015 <<http://gizmodo.com/silk-road-reloaded-ditches-tor-for-a-more-anonymous-net-1678839282>>.

63 William Sheppard, "Dark Wallet: New Weapons for Old Wars," *Center for a Stateless Society*, May 14, 2014 <<http://c4ss.org/content/27031>>.

64 Andy Greenberg, "Darkcoin, the Shadowy Cousin of Bitcoin, Is Booming," *Wired*, May 21, 2014 <<http://www.wired.com/2014/05/darkcoin-is-booming/>>.

65 Adrienne Jeffries, "Price of Bitcoin Still Dropping, Falls Below the Price of Mining," *BetaBeat*, October 17, 2011 <<http://www.betabeat.com/2011/10/17/price-of-bitcoin-still-dropping-falls-below-the-price-of-mining/>>.

incorporating smart phone apps. If interest-free money, based on reputation, was prevalent, Slater says, the effects would include average mortgages falling from thirty to ten years, the implosion of the portion of price reflecting embedded interest throughout the entire supply chain, and an average three-day work week.⁶⁶

The Bitcoin protocol has been forked, and led to dozens of competing specialized currencies piggy-backed on the same basic architecture. According to Carl Miller, "A programmer can piggyback on the bitcoin code, customise it, and within a day give you your own currency. There are around 70 cryptocurrencies currently being traded in reasonable quantities."⁶⁷

But all the Bitcoin knockoffs using the same blockchain architecture have the same problem as the original: they're commodities, units of stored value, that trade on the market, appreciate in price, and thereby create an incentive for speculation and hoarding rather than exchange.

To the extent that Bitcoin has a useful role in the post-state society, it will likely be under conditions of anonymous, long-distance trade where trust is low, with Bitcoin nested into a larger ecosystem that includes more trustworthy currencies that are pure units of exchange for most transactions. As Zacquary Xeper describes it:

People use bitcoin because other people they trade with use bitcoin. If my town is running low on bitcoin but has a lot of resources to share internally, we can create our own local currency to free up bitcoin for importing and exporting. Or I could join an online network of artists who work on one another's projects, and we'd create our own internal currency that plays by whatever rules we need it to.

There is no perfect monetary system for every situation. Bitcoin is not going to be the one world currency, and it doesn't need to be. A lot of people compare Bitcoin to the Internet, but it's more like CompuServe. It's the first of many digital, non-state currencies to come, that will all interoperate with each other in ways we can't even dream of yet.⁶⁸

Perhaps the most promising thing about Bitcoin is not the currency itself, but the ways in which its blockchain ledger system might be used in conjunction with other currencies built on fundamentally different principles. For example,

Former FCC Chairman Reed Hundt has proposed using the block chain technology as a way to create distributed networks of solar power on residential houses. The ledger would keep track of how much energy a given homeowner has generated and shared with others, or consumed, and it would enable the efficient organization of decentralized solar grids.⁶⁹

Now imagine a ledger being used, similarly, as the accounting system for one of Thomas Greco's mutual credit-clearing networks, tracking each member's credits and debits.

Although Bitcoin itself is a deflationary, specie-like currency with all the drawbacks that entails, its blockchain might provide the accounting architecture to make a more just and egalitarian currency system more secure in its operations.

The Open Tabs system, launched in private alpha on Guy Fawkes Day 2011, is a sort of digitized version of Greco's credit-clearing networks.⁷⁰ As described by Melvin Carvalho,

66 Matthew Slater, "What happens after the crypto-revolution?" Matslats, community currency engineer, June 12, 2014 <<http://matslats.net/whither-crypto-revolution>>.

67 Carl Miller, "Dogecoin, Coinye West and the rise of statement cryptocurrencies," Wired.Co.UK, January 13, 2014 <<http://www.wired.co.uk/news/archive/2014-01/13/dogecoin-and-the-era-of-personal-currency>>.

68 Zacquary Xeper, "Bitcoin's Real Revolution Isn't Hard Money, It's Economic Panarchy," *Falkvinge on Infopolicy*, November 6, 2013 <<http://falkvinge.net/2013/11/06/bitcoins-real-revolution-isnt-hard-money-its-economic-panarchy/>>.

69 David Bollier, "The Blockchain: A Promising New Infrastructure for Online Commons," *P2P Foundation Blog*, March 12, 2015 <<https://blog.p2pfoundation.net/the-blockchain-a-promising-new-infrastructure-for-online-commons/2015/03/12>>.

70 <<http://opentabs.net/>>

Opentabs.net is a free software tool to help the 99% of us be less dependent on abusive banking fees....Private alpha launch is this Saturday!

Imagine you owe me money from, say, a train ticket that I bought for you. We then have two options: if it was a small amount, we can decide to forget about it (gift economy), but if it was any noteworthy sum, then we would probably end up using the Plain Old Banking System to settle this little peer-to-peer transaction. People use banking between friends, between house mates, and even between family members, and abusive banking fees play too big a role in our day-to-day life. This has to stop. With Opentabs.net there will be a third option: just tab it!

You can tab amounts of money, beers, hours of work, bitcoins, books, whatever you want to leave unpaid. Just like when you tell the waiter in a bar to put a round of drinks "on your tab", Opentabs.net is a tool for having tabs open with your peers, until it cancels out against something else.

The Opentabs.net web app does not make actual transactions. It is not a currency, and it is not a bank. It just helps you to cryptographically sign open tabs ("IOUs") between peers, as an alternative to actually executing a bank transfer. This way we can both forget about that train ticket you owe me, and strike it off against other transactions, until maybe at the end of the year we clear the balance once, and settle the tab. Just like tabs in a bar.⁷¹

The Metacurrency Project “seeks to build a platform and protocol standards that will allow for multiple and interoperable currencies to exist on the Internet.”

It was started by Eric Harris-Braun and Arthur Brock when we merged our efforts (Open Money and OS-Earth respectively) in developing the technology platform required for building the new and open economy.⁷²

Conclusion

Right now we're in a period of flux, with a thousand flowers simultaneously in bloom and undergoing the natural selection process to determine which one becomes the standard encrypted currency platform. The elements already exist; all that remains is for them to be combined in a single platform which reaches the takeoff point. As Center for a Stateless Society (C4SS) Media Coordinator Tom Knapp told me, by private email:

What's needed is a killer P2P mutual credit app—RipplePay, only with no central server and set up so that mutual trust networks can be created in an encrypted, more-anonymous-at-length manner, e.g., I trust you and know who you are; someone else who trusts me can know that I trust you, and give you some trust for mutual credit purposes on that basis, WITHOUT knowing who you are; the non-anonymous trust webs ramify, encrypted and increasingly anonymized, out to several degrees of separation.

The final piece is probably to make the whole thing somewhat accessible not only by smart phone, but loadable onto mag-strip "debit card" type devices and/or QR codes for those who don't have nearly 100%-reliable and redundant tech access themselves (or for their area, e.g. an agricultural village where only one person has a computer and Internet access via a phone tether) and need to be able to carry "physical cash" linked to the system.

My guess is that all the tech pieces are already there, just waiting to be put together, to make this kind of thing happen. We've got public key encryption, distributed computing, the "loom" (for secure/redundant databasing?), mag-strip/QR readers for smartphones, and P2P networking tech....⁷³

71 Melvin Carvalho, “Open Tabs—Decentralized Money Coming This Week,” *The Next Net*, November 2, 2011 <http://groups.google.com/group/building-a-distributed-decentralized-internet/browse_thread/thread/7e4a41590cc6eccc?hl=en>.

72 <<http://www.metacurrency.org/about>>; See also <http://p2pfoundation.net/Metacurrency_Project>.

73 Thomas Knapp, private email, May 22, 2011.

I suspect the ecology will work out, in the face of trial and error, into a tiered system. There will be a variety of local credit-clearing operations, LETS, etc, along Greco's lines, which are more for denominating simultaneous exchanges of services or future transactions than for storing value. Then there will be some encrypted store of accumulated value like bitcoin for exchanging surpluses between different systems, and for one-off dealings like illegal transactions in which anonymity is at a premium.

C4SS Sysadmin Mike Gogulski added the caveat that “local” might be less a function of geography than of “social graph proximity.”⁷⁴ In any case, if the social graph is organized along the lines of de Ugarte's phyles or Robb's Economy as a Software Service, on an opt-in basis, it could include a pretty substantial number of people who are only casually acquainted if at all and who rely on their reputation within the system for their livelihood (as well as access to support platforms that are tied to membership).

[Last modified December 4, 2015]

74 Mike Gogulski, private email, May 30, 2011.