Monetary Literacy 101

A Short Introduction to the Why and How of Reforming Money

Bernard Lietaer, 2010 *

1 - The Call of Our Times

Humanitys is at a critical juncture. As Paul Hawken succinctly put it in his memorable address to Portland University's graduate class in May of 2009, "civilization needs a new operating system," and fast. Why? Because many of the socio-economic rules under which we operate were created under a worldview that failed to recognize that the earth is a living system and that every form of life has its unique and valuable place and purpose in sustaining the larger web of life. By ignoring the conditions that support the health of our ecosystems and communities, we have inadvertently fouled our nest, and jeopardized the future of our children. We are now awakening to the fact that the ways of thinking, strategies and systems that made the industrial age possible, have also fueled the myriad crises that are now upon us: great financial instability, the breakdown of community, growing disparities of wealth, resource wars, alarming rates of species extinction and ecosystem depletion, and accelerating symptoms of climate change. As our food, energy, health, education, economic and financial systems show increasing signs of failing us, we are being collectively called to harness our creativity and resources to take a major evolutionary leap. *Transitioning from our self-destructive ways to life-affirming understandings, lifestyles and systems is indeed the great work of our times (compare the book by the same title of Thomas Berry).*

How do we turn things around? How can we reverse the downward spiral in which much of our world has been caught?

** This document presents two introductory texts and eight Questions&Answers entries, as well as an extensive glossary of monetary terminology - all originally written by Bernard Lietaer for his now-defunct website "lietaer.com" (launched in 2010). Selection and minor edits were made by Helga Preuß and Leander Bindewald in 2022. For more information and all of Lietaer's publications see the new website at www.bernard-lietaer.org*

The good news is that a fast growing movement of communities, businesses, not-for-profits, and governments around the world is hard at work on this very question. Many experiments are under way on all continents, and there are already many success stories and inspiring new models to point to. Neither creativity nor good intentions are lacking, so why is it that so many change makers around the world often feel that they are swimming upstream? Is there a better and more effective way to harness and direct all the creativity and energy unleashed by our current predicament? My answer is 'yes,' but only if we start paying attention to a piece of the puzzle that is currently not on our radar: our monetary system.

1.1 Re-inventing Our Monetary System

For the growing movement of communities, organizations and governments working to turn things around, the most daunting challenge often revolves around money: How do we find the money needed to transform our energy, food and health infrastructures, to eradicate unemployment and create green jobs, clean up the environment, and ensure that people have proper access to housing, education and meaningful work? Have you ever wondered why cash shortage so bottlenecks our best efforts and initiatives when we actually live in a world where there is neither a shortage of things needing to get done, nor a shortage of people wanting to do them?

The answer to this question has to do with the monopoly of the kind of money system we use, which is the source of the scarcity which so many people experience, and the root cause of a great number of our problems. Our money system was designed a long time ago and is now out of date. It is particularly ill equipped to help us solve the pervasive socio-economic and ecological challenges facing us today. In the next sections, I explain why the transformation of our money system is critical to resolving the challenges of our times and many of the issues you care about. I also explain that monetary diversity is just as important to human survival as bio-diversity is to the fate of the earth.

A number of pioneering governments, businesses and communities around the world have successfully experimented with new monetary systems for years, and with great results. We have at our disposal all the monetary tools we need to reduce poverty, clean up the environment, and provide access to meaningful work, housing and health care. It is now time to use them on a larger scale. A world of sustainable abundance is actually possible, but only if we are willing to upgrade our monetary system so that we can begin to leverage true human wealth, which is our energy and creativity.

Will you please join me in making sure that we do not miss this opportunity? Your own future, the future of your children, and of this extraordinary planet is at stake.

2 - Bird‘s Eye View

Why is the transformation of our monetary system so critical to answering the call of our times? Just as river banks and dams determine where water is encouraged or discouraged to flow, our monetary or currency system (from the Latin verb *currere* – to flow) determines the directions in which human energies are encouraged or discouraged to go, and what we can individually and collectively create as a result. Since the dawn of times, our monetary system has been shaping the flows of human activity in every realm of endeavor (food production, education, health, business etc.) by determining how we value, apply and exchange our creativity, and the fruits of our labor. It is for this reason the most influential of all our man-made systems.

2.1 From Blind Spot to Leverage Point

Most governments, communities and organizations working to create a sustainable world are painfully aware that access to money is the key bottleneck to their efforts. There never seems to be enough of it to clean up the environment, create better schools, ensure proper access to health care, create green jobs, and eliminate unemployment or poverty.

And yet, while most people tend to see money as a key obstacle, hardly anyone seems to really understand why that is so. Most of us do not usually grasp how our monetary system works, when we notice it at all.

Specifically, we tend to misunderstand (a) *what money is*, (b) *how it is created*, and (c) *how our monetary system shapes our behaviors, relationships and circumstances (see 4.1 - 4.4*.below). Historical research actually shows that different types of currencies encourage or dissuade their hoarding or speculation. Some currencies induce competition while others encourage collaboration, and therefore strengthen or weaken community ties. They determine the kind of time horizons upon which business decisions are made, and produce or prevent financial and economic instability. If I am passionate about monetary literacy and committed to the transformation of our monetary system, it is because 40 years of research and work in various parts of that system * have convinced me that our monetary system plays a critical role in causing the challenges we face, and is continually interfering with our efforts to resolve them. It is our biggest blind spot and our best leverage point for turning things around.

* See “Credentials of a Flying Fish” on www.bernard-lietaer.org

The fundamental problem with our current monetary system is that it is not sufficiently diverse, and as a result it dams and bottlenecks our creative energies, and keeps us trapped in a world of scarcity and suffering, when we actually have the capacity to create a very different reality by enabling our energies to move more freely where they are most needed, including toward cleaning up our environment, building adequate housing, providing good quality health care etc. (more about this below). To ensure such diversity, we need to actively support the circulation of different types of currencies for different types of purposes.

Adopting a diversity of currencies is just as important to human survival as bio-diversity is to the fate of the earth. This is *not* a metaphor. Our peer-reviewed **scientific research** on the conditions under which complex flow networks are sustainable demonstrates that money systems share with natural ecosystems the need for a higher diversity and interconnectivity. The conclusion: to ensure such diversity, we need to actively support the circulation of different types of currencies for different types of purposes. Promoting a healthier monetary system requires the use of three different kinds of currencies alongside our national currencies: (1) an inflation-proof **global complementary currency** designed to stabilize the world economy; (2) **business-to-business currencies** designed to counteract the effects of conventional money shortages during periods of economic crises and contraction; and (3) **community currencies*** that address a variety of social problems and strengthen the fabric of society.*

2.3 Entering New Agreements to Create a World of Sustainable Abundance

Money is an agreement within a particular community to use some standardized object as a means of exchange. The problem is that most of the fundamental rules and agreements we have around money were created centuries ago, at a time that was widely different from ours, and by a small group of stakeholders concerned with a narrow set of interests. As a consequence, these agreements are ill-equipped to serve the challenges and objectives of our current world. As long as our monetary system remains a blind spot to us, we remain unable to alter its powerful influence on the way we think and act. As soon as we gain monetary literacy, we can begin examining the nature and implications of the monetary agreements in which we unconsciously participate. We can start identifying the conditions under which they serve or do not serve the needs of our times, and begin to create agreements that better serve our needs.

For the last twenty years, a growing number of businesses and communities around the world have been creating new agreements and using new tools to connect untapped resources and unmet needs through complementary currencies. In 1984, only two such complementary currency

* See curated topic “Currency Examples” in the online library of www.bernard-lietaer.org

systems existed. By 1990, their numbers had grown, but there were still fewer than 200 systems operating in the world. Today, there are thousands such currencies worldwide. Hundreds of Time Banks operate in 22 countries. And in the United States alone, there are already 700 business to business complementary currency systems in which 500,000 businesses participate. This movement is greatly facilitated by new technologies–specifically, inexpensive computing and ubiquitous access to the Internet. Though many of these changes remain invisible to the mainstream media and the general public, these new sub-systems are beginning to create upward (life-affirming) spirals within the larger system, slowly causing the latter to become more decentralized and diversified, and therefore more resilient and flexible.

Every time anyone of us chooses to enter into new agreements (for instance, by using or accepting a local or regional currency, or joining a business-2-business mutual barter network), we contribute to diversify our overall monetary system, allowing more connections and exchanges to take place than would otherwise be the case under the monopolistic use of national currencies. The time has come to free and leverage our gifts and resources to address the great challenges of our times, and create a world of sustainable abundance, based on true human wealth, which is our creative energy.

3 - Questions and Answers

3.1 What is money?

Most people tend to regard money as “a thing” because that is usually the way it appears to us (as paper, coins, checks, credit cards etc). And yet, stranded on a desert island, we would quickly discover that while our knife remains useful as a knife, whatever cash or checks we carried would now be totally useless. It would remain paper, but it would no longer be “money”. For any “thing” to act as money, it requires a community to agree that a particular object has a certain value in an exchange.

Money can be defined as an *agreement*, within a *community*, to use something as *a medium of exchange*. As an *agreement,* money lives in the same space as other social constructs like marriage or lease agreements. These constructs are real, even if they only exist in people’s minds. The money agreement can be made formally or informally, freely or by coercion, consciously or unconsciously. Most of us do not consciously agree to use U.S. dollars, euros, or yens, for instance, nor do we consider their nature. We just use them, unconsciously entering into an unspoken agreement with our banking system. Any monetary agreement is only valid within a given *community.* Some monetary agreements are operational only among a small group of friends, like chips used in card games; for certain periods, like the cigarette medium of exchange among front-line soldiers during world war II; or within a larger community, like the citizens of one particular nation. A community can be geographically disparate, such as Internet users, or can include large segments of the global community, as in the case of the U.S. dollar in its role as international reference currency.

The key function that transforms the chosen object into money is its role as medium of exchange. There are other functions that today's money tends to perform, such as unit of account, store of value, tool of speculation, and so on. However, these other functions may be considered secondary, as there have been effective and functional currencies that did not perform some or any of these other roles.

In summary, the magic of money is bestowed on something as soon as a community can agree to use it as a medium of exchange. Our money and monetary system are, therefore, not de facto realities like air or water, but are choices, like social contracts or business agreements.

"Money" is used throughout this work as a generic, overarching term. Specific types of money are referred to by the term "currency". There are two general subcategories of currencies: national currencies and complementary currencies (see sections 4.6 below for more on this). We are accustomed to considering only our national currencies as 'real' money. However, national currencies have been designed for specific purposes only, and cannot fulfill certain social objectives (such as fostering trade and cooperation, or ecological sustainability). Some currencies already operational today or being proposed for the future are designed to fulfill such objectives, and operate best when they are used in tandem with the national currencies.

Why is it important to understand that money is not a thing, but an agreement?

If we regard money as a thing, it becomes a given, and we lose our ability to change it in any way. We are treating money as if it is God-given, like rain or the number of planets in the solar system. But it is not a given. If you don't like the quality of rain, you cannot do much about it. If you don't like your money system, on the other hand, you can do something about it. When we understand that money is created by a set of understandings and practices, we can begin examining the terms of these agreements to see whether they actually serve our collective aspirations and objectives. Currencies can be redesigned to better meet our needs.

3.2 Who creates money?

Contrary to popular belief, governments do not create money in our current system. As a matter of fact, whenever the revenues generated by taxes are inferior to their outlays, governments have to borrow money from the general public through the bond market, or through the banking system.

Money is actually created by the banking system. A country's banking system includes the banks themselves and the central bank that supervises the banks incorporated in its jurisdiction. In the case of the US, the central bank is the Federal Reserve Bank.

In essence, new money is produced each time a new loan is approved by the banking system either for the private or the public sector. It is called fiat money because it is money created "out of nothing". Since only a small part of the money is drawn from bank deposits (typically less than 10%), the balance (more than 90%) is created through the fractional reserve system. This means that only a small part of the money lent originates from the reserves of the bank.

3.3 What is the Problem with our Current Money System?

Our modern monetary systems share in common the fact that they consist of a nationwide, government-enforced *monopoly* of a *single type* of currency, *created by banks* through loans attached to *positive interest rates*, and naturally or artificially kept scarce. While these particular features of our money system have permitted the accumulation of capital that enabled rapid industrialization during the modern era, they also have a number of hidden but far-reaching counterproductive side effects.

The use of positive interest alone is responsible for driving (1) the short-term thinking that drives our economic decisions, (2) the relentless pressure for economic growth which feeds hyper-consumerism; (3) growing inequities; (4) the greed and rampant speculation which regularly make the front page of our media, (5) and the weakening of social ties and erosion of community. (See section 4.5 below for more on this.) To be clear, the problem is neither our national currencies nor the use of interest per se, but the monopolistic use of these types of currencies which are only well-suited for certain purposes but not for others. The fundamental problem with our current monetary system is that it is not sufficiently diverse, and as a result it dams and bottlenecks our creative energies, and keeps us trapped in a world of scarcity and suffering, when we actually have the capacity to create a very different reality. Our conventional money facilitates particular types of (commercial) flows but does not adequately support other types of flows within communities. When a broader spectrum of currencies is in place, people can complete more transactions, enabling more people to meet their needs and enter into exchange relationships. Because complementary currencies do not bear interests and are issued in sufficient supply, they encourage cooperation amongst participants, and can counterbalance some of the side-effects of conventional money.

Biologist Elizabeth Sahtouris once asked: “How would a body survive if we decided that all the blood should go to the brain or the liver, or certain organs should only be irrigated with blood on certain conditions?” This is precisely what is happening to our world economy under a monoculture of national currencies that are distributed based on a centralized decision making system controlled by a few financial institutions. All the blood (dollars, euros etc.) is being sent to specific organs that are supplied while others (communities and regions) are often starved to death. When they are not properly counterbalanced by complementary currencies, national currencies promote embolism (which is the accumulation of blood in one place).

3.4 What are the main characteristics of modern national currencies?

National currencies

1. are geographically attached to a nation-state,
2. are chosen by a central authority when it declares that something is the only medium of exchange acceptable in payment of taxes (the only valid “legal tender” for all private and public debts),
3. are “*fiat currencies,” created by bank debt*, and *issued in scarce supply* as “debt money derives its value from its scarcity relative to its usefulness” (Jackson & McConnell Economics. McGraw-Hill, 1988.)
4. and bear interest, a feature which in turns:

    creates structural competition between participants and encourages short-term planning via “discounted cash flow”. *

The Effects of national currencies:

1. they bolster national consciousness by facilitating economic interactions with fellow citizens rather than with foreigners;
2. They encourage competition and facilitate concentration of wealth (which was key to catalyzing the industrial revolution);
3. they have proven flexible enough to be adopted by all countries (including “communist” ones), independently of political context;
4. they have attracted sophisticated financial services and institutions; and
5. they are legal tender for all debts public and private.

* See the story of “The Eleventh Round” in my book *On Human Wealth*, 2004, with Stephen Belgin, pages 27&28 - reprinted in the Appendix 5.1 at the end of this document.

3.5 What are the three main effects of interest-based currencies?

Until the 16th Century, Western Civilization prohibited the practice of charging interest on money on both moral and legal grounds. In our modern monetary system, however, money is created by banks through loans issued with interest. Though the full implications of the loans that create our money are seldom understood, their effects upon society are pervasive and powerful. Three consequences of interest as a built-in feature of our monetary system are that (1) it encourages systematic competition among the participants in the system; (2) it continually fuels the need for endless economic growth; and (3) it concentrates wealth by transferring money from the vast majority to a small minority.

Encouragement of Competition – When a bank creates money by providing you with, say, a $100,000 mortgage loan, it creates only the principal when it credits your account. However, it expects a return of some $200,000 over the next 20 years or so. The bank does not create the interest; it requires you to earn this second $100,000 through your interactions with others. So, how does a loan, whose interest is never created, get repaid? Essentially, to pay back interest on a loan, someone else's principal must be used. In other words, not creating the money to pay interest is the device used to generate the scarcity necessary for a bank-debt monetary system to function. It forces people to compete with each other for money that was never created, and penalizes them with bankruptcy should they not succeed. The story of the 11th round (see Appendix below) illustrates the way interest is woven into the fabric of our monetary system and how it stimulates competition amongst its users.

The Need for Endless Growth – The main simplifying assumption of the "eleventh round" story is that everything remains the same from one year to the next. In reality, we do not live in a world of zero growth in population, output, or money supply. The real process involves growth of all three. The monetary system just takes the first slice of that growth to pay for interest. In agrarian societies, one customarily sacrificed to the gods the first fruits of the harvest. Now, instead, we give the first fruits of our toils to the financial system. In real life, population, production, and money supply all grow at different rates from year to year, making it much more difficult than in our eleventh round story to notice what is actually happening. The monetary system acts like a treadmill, requiring continuous economic growth, even if the average real standard of living were to remain stagnant. In short, the interest rate determines the average rate of economic growth needed to remain at the same place. This supposed need for perpetual growth is another fact of life in our modern societies. This monetary system was created during a time in which nobody recognized any ecological or other constraints for indefinite and compulsory growth.

Concentration of Wealth – A third systematic effect of interest is its continual transfer of wealth from the vast majority to a small minority. The wealthiest receive an uninterrupted rent from whoever needs to borrow to obtain the medium of exchange. Interest by definition is a process that transfers money from people who don't have enough of it (and therefore have to borrow it) to those who have more than they need (and who are therefore able to lend it).

***Conclusion**:* The three main effects of interest (competition, the need for perpetual growth, and unrelenting wealth concentration) have been the hidden engines that have propelled us into and through the Industrial Revolution. Both the best and the worst of what the Modern Age has achieved can be directly and indirectly attributed to these hidden effects of interest - the apparently benign feature of our prevailing monetary system.

3.6 What are complementary currencies?

Complementary currencies are agreements within a community to accept something else than national currencies as a means of payment. They are sometimes called community currencies, local currencies or "common tender". Not all these common tender currencies are local, however, and some have purposes other than community building. Because they are designed to function in parallel with conventional money **-** not replacing but complementing national currencies **-** we will use the terminology of "complementary" to describe them.

New monetary innovations are now being crafted and used by an ever-growing number of communities worldwide to address a wide array of different social and economic mandates: from effectively caring for the elderly in Japan, to urban renewal in communities like Curitiba or Palmeiras in Brazil, providing new jobs and significantly raising the standard of living in communities, all without incurring costs to government or industry. *

The potential and adaptability of social currency innovations are part of the shift from the Industrial Age to a Post-Industrial or Information Age. Most of them would not have appeared without cheap computing power becoming available. This also explains their impressive growth from a handful to thousands such currency systems worldwide in the past two decades.

* For more on this examples see *On Human Wealth*, 2004, with Stephen Belgin, pages 2-3; reproduced in the Appendix below.

Mounting evidence from these practical experiments in diverse communities around the globe demonstrates that complementary currencies can have significant positive impacts on communities that use them. These new kinds of currencies are addressing critical social problems for which conventional money has proven inadequate such as the erosion of community, ecological deterioration, the need for elderly care, and much more.

3.7 Won't community currencies create inflation?

A common reaction to the concept of a community currency is that it will increase the money supply and therefore fuel inflation. This reaction is further reinforced by the observation that the built-in incentive to get rid of a booster or demurrage currency * reflects behavior observed in an inflationary environment. What happens beyond these first impressions?

Consider the issue of increased money supply: Do airline frequent flyer programs increase total airline flying? The answer is obviously yes. But does a frequent flyer ticket create inflationary pressures on air fares? The answer is no, because the airline will readjust as needed the constraints on frequent flyer usage (by, for example, having frequent flyer seats available only on weekends or in off seasons, or only for red eye flights, or only for a certain percentage of the seats). In other words, the airlines will ensure that only otherwise empty seats will be used by frequent flyers.

The same is true for community currencies: their natural niche is linking unused resources to otherwise unmet needs. The more sophisticated community currencies even specifically target this application. The local businesses participating in the Commonweal experiment in Minneapolis accept the community currency only for otherwise unused resources, as when, for example, a restaurant accepts community currency from early diners. Even the quantity of local currency issued is only 75 percent of the discounts of goods or services made available to the system by participating merchants. So long as community currencies are issued specifically to ensure the use of otherwise idle resources, inflationary pressures cannot be generated.

In summary, while the behavior patterns generated by the booster concept may look similar to what is observed under inflation, the cause is different. More importantly, the consequences of spending are diametrically opposed: Under hyperinflation, society collapses, while with community currencies the fabric of society is reinforced.

It is important to realize that "normal" national currencies and community currencies play different roles. Nonetheless, theory and practice show that it is possible to design a truly symbiotic relationship between them.

* See Glossary below.

3.8 Is a Community Currency Just Another Welfare System?

To many people, anything that helps the poor is a welfare system. While that is indeed the case in most programs, community currencies are an exception.

Let us consider a practical example from a city that, by American standards, would be considered an extreme case of poverty. It will show that a community currency does indeed help the poor–but by using market forces, not any transfer of resources from the rich to the poor. In fact, it makes some welfare systems unnecessary because it puts the poor to work to help themselves.

When Jaime Lerner became mayor of the medium-sized Brazilian town of Curitiba in 1973, he had a tricky garbage collection problem. The majority of the 500,000 people of Curitiba lived in shanty towns (favelas) which had been built so haphazardly that even the garbage trucks could not get into them. The accumulation of garbage attracted rodents, which in turn spread diseases at alarming rates. The classical solution would have been a welfare program to try to clean up the mess, but Lerner did not have that option because there were too few rich people in Curitiba, and the necessary funds were not available.

The mayor was forced to invent another way. His solution was to pay public transport tokens to people for their garbage, under the condition that they pre-sort and deposit it in recycling bins around the favelas. For organic waste, which was composted for use by farmers as fertilizer, people received chits that could be exchanged for food. The program worked spectacularly: the favelas were clean-picked by the kids, who quickly learned to distinguish between the different types of recyclable products. People could leave the favelas by public transport and travel to the center of town where the jobs were. The additional buses and gasoline were paid for with the proceeds from the sale of the pre-sorted garbage to the glass, paper, and metal manufacturing companies. Even “normal” money was saved because fewer trucks and less gasoline were required to pick up the pre-sorted garbage. And all this does not even include the savings due to reduced disease and a more efficient labor market. Today, Curitiba is clean, prosperous, self-sufficient, and the only Brazilian city I know to refuse money from the state. It has a state-of-the-art public transportation system and a popular mayor who has been repeatedly reelected. Perhaps most significant, a strong sense of community and pride has arisen in a place where none was visible before.*

There is a general lesson here that politicians from every country should become acquainted with: welfare programs can be replaced by imagination and creativity if the right leadership is available. Also, politicians get reelected for providing such leadership.

* See more on the Curitiba in the Appendix 5.2 below.

4 - Glossary

Backed Currency: A currency whose value is guaranteed by a direct correspondence with a product or service (e.g. the gold standard for 19th century U.S. dollars). There are only 3 ways of designing a currency system:

1. fiat (i.e. without reference to anything else);
2. valued by a commodity, when its value is expressed of terms of the value of that commodity (whether or not it is redeemable in that commodity e.g.: Bretton Woods dollar-gold equivalence standard; airline miles); or
3. backed by a commodity when the currency is in fact a claim to a given quantity of that commodity (which typically requires having a stock of that commodity on hand to meet such requests).

Barter: the direct exchange of goods or services un-mediated by any type of currency.

Booms and Busts: a recurrent cycle of growth, bust, recession, and recovery in the economic activity of a capitalist country. There have been 47 major asset boom/bust cycles since 1637, the last two being the Japanese real-estate bubble, and the U.S. high-tech stock market bubble that crashed respectively in 1990 and 2000.

Bretton Woods Agreement: the major world powers met in Bretton Woods, New Hampshire, in 1944 to organize an international monetary system that would alleviate foreign-exchange problems created by World War II. The result was the Bretton Woods Agreement, the first global monetary constitution. The World Bank and International Monetary Fund (IMF) were established there. The participating nations agreed to tie the values of their currencies to the value of the U.S. dollar.

Business Cycle: a term used in economics to designate cyclical changes in the economy. Ever since the Industrial Revolution, the level of business activity in industrialized countries has veered from high to low and back up again. The timing of a cycle is not predictable, but its phases seem to be. Many economists cite four phases: prosperity, liquidation, recession or depression, and recovery; using the terms originally developed by the American economist Wesley Mitchell.

Capital: in its narrow financial sense, capital is a sum of money from which an income can be derived. The two most traditional means for such income is interest (in the case of loans) and dividends (in the case of stocks). In broader terms, capital is a resource that enhances life, of which several types can be distinguished: financial capital, physical capital (e.g., plants, equipment), intellectual capital (e.g., patents, copyrights), social capital (e.g., relationships) and natural capital (Mother Nature).

Central Bank: a financial institution whose function is to regulate state fiscal and monetary activities. It is responsible, amongst other things, for the issue of bills and for controlling the flow of a national currency. Some Central Banks (e.g. The U.S. Federal Reserve Bank and the Deutsche Bundesbank) are owned by private banks; some are owned by the government (e.g.: Banque de France, the People's Bank of China, and the Bank of England since its nationalization in the 1950s); some are mixed (e.g.: the Belgian Central Bank and the Bank of Japan). All Central Banks are responsible for the internal stability (i.e. inflation-fighting) and external stability (i.e. value compared to other national currencies) of their national currency. They have a variety of means at their disposal to achieve these aims, including intervention (buying or selling the national currency in the market in exchange for other national currencies); interest-rate fixing; or fixing reserve requirements for the private banks. All these techniques really boil down to fixing the maximum quantity of fiat currency that the private banks will be capable of issuing and at what cost.

Chaordic: a term coined by Dee Hock, founder of Visa. It comprises a combination of chaos and order: a natural characteristic of living systems that produces synergy, growth and change.

Clearing House: a central collection place where institutions and individuals exchange checks, drafts and currencies. Participants maintain an account with the Clearing House against which credits or debits are posted.

Commodity-Backed Currency: a currency whose value is guaranteed by the physical availability of the commodity that backs the currency. The owner of a backed currency can normally ask for delivery of the physical good or service in exchange for the currency. Backed currency is typically issued by whoever owns the product or service accepted as backing (e.g., the 19th century gold standard backed by gold).

Complementary Currency: an agreement within a community to create its own currency to link unmet needs with unused resources. These currencies do not replace but rather supplement (i.e., complement) the national monetary system and provide greater functionality to money.

Countertrade: barter at the corporate, multinational level.

Currency: synonymous with money, but emphasizing the medium of exchange function of money.

Currency Crisis: a dramatic and sudden change of value of a country's currency relative to other currencies, typically accompanied by a swift increase of the flow of capital in or out of the country.

Demurrage Charge: a time-related charge on money. It acts in a manner similar to a rental fee, which increases the longer it is held onto. For example, a 5% annual demurrage charge on $100 incurs a $5 fee, leaving a remainder of $95. The demurrage feature wields two profound effects, namely: It promotes a currency's circulation as a trading device; and it encourages long-term thinking.

Deregulation: dismantling of legal and governmental restrictions on the operation of certain businesses. When governments want to encourage competition and make economies more productive, they often deregulate, removing restrictions on companies' behavior.

Derivatives: a financial instrument that enables the segmentation of different types of risk. The main derivatives types are futures (contracted in a regulated exchange), forwards (contracted in the unregulated "over the counter" market) and options. Exotic derivatives are complex combinations of simpler derivatives (e.g. forwards and options).

Development Banks: multilateral banks that lend money toward or invest in the economic development of countries. The World Bank (officially called the International Bank for Reconstruction and Development) and regional banks such as the European Bank for Reconstruction and Development (EBRD), and the Asian Development Bank (ADB) are such institutions.

Discounted Cash Flow: calculates the value of a future cash flow in terms of an equivalent value today. For instance, $100 a year from now is equivalent to $90.91 today if one uses a discount rate of 10% (conversely, a one-year, risk-free investment of $90.91 at a rate of 10% will yield $100).

Dollar-Gold Equivalence Standard: a guarantee of the convertibility of U.S. dollars into gold on demand. This was established at the fixed rate of $35 per ounce by the Bretton Woods Agreement (1944), but abandoned by the Nixon administration (1971).

Economic Development: the promotion of more intensive and more advanced economic activity through education, improved tools and techniques, increased financing, better transportation facilities, and creation of new businesses.

Elderplan: a New York-based health insurance company that accepts part of its premiums for elders in Time Dollars, a mutual credit complementary currency. Website: www.elderplan.org

Emerging Markets: nations whose economies are transitioning or have recently transitioned from heavy state control to economic policies that are more market-oriented.

Equanomics: an expansion of conventional economic theory to encompass all relevant criteria in the assessment and realization of a more functional and integrated science concerned with the production and distribution of wealth. It formally takes into account what conventional economics considers as "externalities," e.g., social, ecological, psychological or political effects of economic policies.

Euro: the European supra-national monetary unit, implemented on Jan 1, 2002. It officially replaced the national currencies of twelve member states of the European Union, namely: Belgium, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, The Netherlands, Austria, Portugal and Finland.

Exchange Rates: the value of currencies worldwide is provided by exchange rates that determine what each currency is worth in terms of other currencies. Just like any other commodity, a currency is now worth whatever people will pay for it. A Norwegian krone, for example, is worth a given amount of euros, dollars or yen.

Favelas: Brazilian Portuguese for slums; a collection of impoverished dwellings made from discarded materials like cardboard boxes, scrap metal, wood and plastics.

Fiat Money: money that is created by the power of an authority. *Fiat Lux* ("Let light be") were the first words that God pronounced, according to Genesis. Fiat money is money created out of nothing ("*ex nihilo*") by the power of the word of an authority and is not backed by goods or services. All national currencies today are fiat currencies.

Financial Deregulation: the reduction of a government's role in controlling financial markets; relying on market forces to function without governmental intervention.

Fixed Exchange Rate: rate fixed by an authority at which one currency can be exchanged against another.

Floating Exchanges: the flexible exchange rate system in which the exchange rate is determined by the market forces of supply and demand without governmental intervention.

Gift Economy: economy in which the exchange of gifts plays the key social role. Anthropological research has shown a direct relationship between gift exchanges and community building. The Latin origin of the word community itself shows this connection: *cum* (together, among each other); and *munere* (to give); hence community, "to give among each other."

Globalization: integration of the world's culture, economy, and infrastructure, driven by the lowering of political barriers to transnational trade and investment, and by the rapid proliferation of communication and information technologies. The term is often used in reference to the substantial impact of free-market forces on local, regional and national economies.

Gold Standard: in economics, the monetary system wherein all forms of legal tender may be converted on demand into fixed quantities of fine gold, as defined by law; having three principal aims: to facilitate the settlement of international commercial and financial transactions; to establish stability in foreign exchange rates; to maintain domestic monetary stability.

Gross Domestic Product (GDP): the total value of all goods and services produced within a country in a year, minus the net income from investments in other countries.

Gross National Product (GNP): the total annual flow of goods and services in monetary value in the economy of a nation. The GNP is normally measured by totaling all personal spending, government spending, and investment spending by a nation's industry. GNP can also be calculated by the earnings and cost approach of accounting, in which all forms of wages and income (e.g., corporate profits, net interest returns, rent, indirect business taxes, unincorporated income) are added together.

Hedge Funds: only remotely related to the practice of hedging, hedge funds borrow money to make speculative investments, usually in areas from which more conservative investors shy away.

Human Wealth: the assets and capital inherent in the spirit, creative genius and unbounded potential of the ever-evolving human species.

Inflation: depreciation over time of the value of a currency in terms of a reference basket of goods and services. An excess of fiat money supply will tend to create inflation.

Interest: time-related income for the owner of a currency, or time-related cost for the borrower of a currency. Interest is one of the ingredients in the Discounted Cash Flow (see above).

Legal Tender: a currency that is recognized as acceptable payment for all debts, public and private. A debt can be declared void if repayment in legal tender is refused.

LETS: acronym for Local Exchange Trading System. This is the most popular form of mutual credit system in the world.

Loyalty Currency: a complementary currency aimed at encouraging commercial loyalty of customers to a particular company or group of companies.

Means of Payment vs. Medium of Exchange: "means of payment" is a function broader than, but including, the function of "medium of exchange". Jonathan Williams showed that only in Western civilization has the entire focus of money been as a medium of exchange for commercial transactions. Most other civilizations used money for community-building, ritual purposes, as well as commercial exchanges.

Money: synonymous with currency or means of payment. A working definition is "an agreement within a community to use something as a medium of exchange."

Multinational Corporation: a large company that operates or has investments in several different countries.

Mutual Credit: process of creating money by a simultaneous debit and credit between participants in the transaction. Examples of mutual credit systems include LETS and Time Dollars. The principle advantage of mutual credit systems is that they are self-regulated to always have currency available in sufficiency.

Payment system: procedure and infrastructure by which the transfer of a currency is executed from one entity (or person) to another.

Scarce: in insufficient quantity. In all national currencies, bank debt money keeps value only by its scarcity compared to its usefulness. The polarity of scarcity is not over-abundance, but sufficiency. For instance, in a mutual credit system there is always sufficiency of money as participants create it among themselves as a debit and credit at the moment of a transaction.

Scrip: private currency initially issued in the form of a paper IOU by a corporation or individual. For example, frequent-flyer miles are evolving from a simple loyalty currency to a corporate scrip issued by airlines.

Stock: a fraction of ownership in a business. Stock markets are the regulated exchanges for stocks of companies listed in a particular exchange.

Speciation: the evolutionary formation of new biological species, usually by the division of a single species into two or more genetically distinct ones.

Store of Value: Money can be used as a store of value, i.e. a way to accumulate value until one wants to use it. Historically, there have been many cases where money was *not* a store of value (e.g.: before the Industrial Age, the main storage of value was land, land improvements, and livestock; and today people store value in stocks in companies investing in assets that keep (or increase in) value over time, such as forests, etc.). There is a social cost in using currency as a store of value, because when currency is stored it is unavailable for transactions by other people. Demurrage is a way of encouraging people to use the currency not as a store of value but only as a medium of exchange.

Terra Trade Reference CurrencyTM (Terra TRC™): a proposed, privately issued, complementary currency designed to systematically stabilize the effects on the business cycle and re-align financial interests with long-term sustainability. This internet-based trade reference currency will be fully backed by a dozen or so of the most important commodities and services in international trade, thereby providing, for the first time since the gold-standard days, an international standard of value that is inflation-resistant. Its unit of account is the Terra TRC. It has a built-in circulation incentive via its demurrage feature. As a complementary currency, it will work in parallel with national currencies.

Time Dollar: a mutual credit system with 'hours of services' as the unit of account.

Unit of Account: One of the functions of money in many (but not all) money systems: the unit by which value is accounted and thus compared. For instance: if pears are at $3 per pound, while apples are at $2 per pound, the common unit, in this case the $, allows an easy comparison of the prices or values of the two items. Within an individual money system, the unit of account may or may not be relevant: WIR, for example, uses the Swiss Franc as unit of account, but WIR as means of payment; Time Dollars, by contrast, are both measured and exchanged as hours of service.

Usury: the practice of lending money and charging the borrower interest. Before the 19th century, any interest was considered usury; today one refers to usury typically when interest is at an exorbitant or illegally high rate.

Yin-Yang: the Taoist concept of relationship between polarities.

Yang Currency; Yang Economy: a Yang currency is one whose issuance is based on hierarchy, encourages accumulation in the form of currency, and tends to generate competition among its participants. All conventional national currencies are Yang currencies, as they exhibit each one of these Yang features. The Yang economy tends to build financial capital.

Yin Currency; Yin Economy: a Yin currency is one whose issuance is based on egalitarianism, discourages accumulation, and encourages cooperation among its users. Well-designed complementary currencies will tend to activate a cooperative "Yin economy." The Yin economy tends to build social capital.

5 - Appendix

5.1 The Eleventh Round

(Reproduced from: *On Human Wealth*, 2004, with Stephen Belgin, pages 27&28)

Once upon a time, there was a small village where people knew nothing about money or interest. Each market day, people would bring their chickens, eggs, hams and breads to the marketplace and enter into the time- honored ritual of negotiations and exchange for what they needed with one another. At harvests, or whenever someone's barn needed repairs after a storm, the villagers simply exercised another age-old tradition of helping one another, knowing that if they themselves had a problem one day, others would surely come to their aid in turn.

One market day, a stranger with shiny black shoes and an elegant white hat came by and observed the whole process with a sardonic smile. When he saw one farmer running around to corral six chickens wanted in exchange for a big ham, the stranger could not refrain from laughing. "Poor people," he said, "so primitive."

Overhearing this, the farmer's wife challenged him. "Do you think you can do a better job handling chickens?" The stranger responded: "Chickens, no. But there is a much better way to eliminate all the hassles. Bring me one large cowhide and gather the families. I'll explain the better way."

As requested, the families gathered, and the stranger took the cowhide,

cut perfect leather rounds in it and put an elaborate and graceful little stamp on each round. He then gave ten rounds to each family, stating that each round represented the value of one chicken. ?"Now you can trade and bargain with the rounds instead of those unwieldy chickens.?" It seemed to make sense and everybody was quite impressed with the stranger.

"One more thing," the stranger added. "In one year's time, I will return and I want each of you to bring me back an extra round, an eleventh round. That eleventh round is a token of appreciation for the technological improvement I just made possible in your lives."

"But where will that round come from?" asked the wife.

"You'll see,?" said the stranger, with a knowing look.

Assuming that the population and its annual production remained exactly the same during that next year, what do you think happened? Remember, that eleventh round was never created.

As the stranger had suggested, it was far more convenient to exchange rounds instead of the chickens on market days. But this convenience had a hidden cost beyond the demanded eleventh round?—that of generating a systemic undertow of competition among all the participants. The equivalent of one out of each eleven families would have to lose all of its rounds, even if everybody managed their affairs well, in order to provide the eleventh round to the stranger.

The following year, when a storm threatened some of the farmers, there was a greater reluctance to assist neighbors. The families were now in a wrestling match for that eleventh round, the round that had not been created, which actively discouraged the spontaneous cooperation that had long been the tradition in the village.

5.2 The Story of Curitiba

(Reproduced from: *On Human Wealth*, 2004, with Stephen Belgin, pages 1-3)

Garbage was a major problem in Curitiba, the capital of the southeastern state of Paraná, Brazil. Its urban population had mushroomed from 120,000 in 1942 to a staggering 2.3 million in 1997. Many of the inhabitants lived in favelas, shantytowns made out of cardboard and corrugated metal. Garbage collection trucks could not even get into these favelas as no streets there were wide enough for them to travel through. As a consequence, the garbage just piled up and diseases broke out.

Jaime Lerner, who became mayor of Curitiba in 1971, did not have access to funds to apply ?"normal?" solutions such as bulldozing the area, or building new streets. Bond measures, raising taxes or federal assistance were simply not options. Another way had to be found in order to deal with the garbage problem.

Large metallic bins were placed on the streets at the edge of the favelas. Anyone who brought in a bag full of garbage earned a bus token. For those who collected biodegradable materials, a plastic chit was given, exchangeable for food parcels of seasonal fresh fruits and vegetables. In addition, a school-based garbage collection program supplied poorer students with notebooks.

The neighborhoods were soon picked clean by tens of thousands of children. Parents made use of these tokens to take the bus downtown, oftentimes to find and report to work. The bus tokens were soon being accepted at local markets and exchanged for food as well. In one three- year period, *more than 100 schools traded 200 tons of garbage for 1.9 million notebooks. The paper-recycling component alone saved the equivalent of 1,200 trees?—each day!*

These improvements were accomplished without the need for the redistribution of wealth, without having to raise taxes or bond measures, without the need for charity or loans, without having to depend on the federal government or international organizations such as the World Bank (WB) or the International Monetary Fund (IMF). No one was burdened to gain the improvement. And everyone benefited.

Eventually, more than 70% of Curitiban households became involved. The 62 poorer neighborhoods alone exchanged 11,000 tons of garbage for nearly a million bus tokens and 1,200 tons of food. The results in purely economic terms are worth noting. From 1975-1995, the Domestic Product of the city of Curitiba increased by some 75% more than for the entire state of Paraná and 48% more than for Brazil as a whole. The average Curitibano makes about 3.3 times the country?'s minimum salary, but his real total income is at least 30% higher still (i.e., about 5 times the minimum salary.) This 30% difference is income directly derived in non-traditional monetary forms, such as the food for garbage systems. What the results were in human terms, in the renewal of dignity, honor, pride and faith in the future of these Curitibanos can only be imagined.

Other programs were created as well, designed specifically to finance the restoration of historical buildings, create green areas and provide social housing, all by means that would not financially burden the municipality.

In 1992, Curitiba was awarded the title of "the most ecological city in the world" by the United Nations.

This city discovered a means by which to match unmet needs (e.g., garbage collection, environmental issues, city restoration, job creation, education, hunger, etc.) with unused resources?—the talents, willingness, and longing of people to participate in the creation of a better life for themselves, their loved ones and their community. They did so by re-thinking money, by making use of complementary currencies?—monetary initiatives that do not replace but rather "complement" (i.e., assist, support, and balance) their national currency system. This innovative approach enabled one developing, formerly impoverished city to vastly improve its living standards and conditions in the remarkable span of a single generation.

Curitiba represents an important, 25-year practical case study demonstrating that a "whole system" approach that uses both the traditional national currency and a well-designed complementary currency is of benefit to all, including those people and entities that are focused exclusively on the traditional economy denominated in national currencies.