

Translation from “L’Essai sur l’oeconomie” by Pierre Calame, published at [Editions Charles-Léopold Mayer](#), Paris, 2009. Translated from French by Michael C. Behrent, reviewed by the author. All rights reserved.

Part II: The General Principles of Oeconomy

Chapter 7: Currency and Finance

1. Currency, Finance, Energy: Three Facets, One Reality

“Money,” “currency,” “monetary,” “finance,” “financial,” “financial intermediaries,” “finacialization”: these words, which have appeared throughout this book, lead us, like Hansel and Gretel’s breadcrumbs, to the final chapter.

I am not a specialist in financial and monetary matters. I have, however, constantly grappled with them, first as a civil servant, then as the head of a foundation. I encountered the concept of local currency before it was popular, when, as a civil servant in the French town Valenciennes, I was confronted with a region in crisis. Every promoter of local currency, beginning with Gesell in turn-of-the-century Austria, has been driven by more or less the same motivations as mine: they are outraged that idle hands can exist alongside unsatisfied needs.

I met Mohammed Yunus through my foundation in 1986, thanks to Maria Nowak, the founder of ADIE (the Agence pour le développement de l’initiative économique). Neither Yunus nor microcredit was as famous then as they are today. We helped Yunus produce one of the first films about the Grameen Bank. I was first interested in microcredit because of its implications

for the struggle against social exclusion,¹ but I quickly realized its importance for thinking about how financial institutions build trust. This led us, in 1992, to organize one of the first international meetings on community financing, which gave birth to the French organization Finansol.²

As head of the Charles Léopold Mayer Foundation, I am also its financial manager. Foundations are faced with an inherent dilemma. On the one hand, they depend on income from their investments to survive. These investments must be both sizable and managed in a way that ensures they can be sustained over time. On the other hand, foundations inevitably ask themselves whether their investments are ethical and socially responsible. These concerns led me to investigate the ways in which banks manage assets. I was struck, I must confess, by their rather narrow sense of professionalism—by their inability, that is, to think beyond the language of the *Financial Times*. Conformity reigns supreme.³

I remember talking with an official at a prestigious Swiss bank about my foundation's investments. In the middle of our conversation, he began telling me about the trust fund he had set up for his children. I asked him if he managed it similarly to the way that he handled our investments. He was indignant: "Of course not! I manage my children's fund with an eye to the future!" Luckily, in 1997, we discovered MBC Capital Advice.⁴ Its founder, Moshen Sohrabi, had begun to specialize in advising institutions that needed help managing their assets, something that was uncommon in Switzerland at the time. He offered us an assessment of the practices of asset managers and, more valuable still, a long-term perspective on financial matters.

¹ Pierre Calame, *Mission possible*, *op. cit.*, 1993.

² Finansol (www.finansol.org), founded in 1995, groups together the community financing organizations in France. The association created the brand "Finansol" in order to give a practical basis to the idea of community financing.

³ In 1931, John Maynard Keynes observed: "a sound banker, alas, is not one who foresees danger and avoids it, but one who, when he is ruined, is ruined in a conventional and orthodox way with his fellows, so that no-one can really blame him." Quoted by James K. Galbraith in "La fin du nouveau consensus monétaire," *La vie des idées*, August 2008, www.laviedesidees.fr.

⁴ MBS capital Advice, www.mbscapital.com.

For some time we had felt that financiers were perpetuating a system the purpose of which they no longer understood. I lose track of the number of times that I have heard bank officials schizophrenically extolling market efficiency in public while bemoaning “casino economics” in private! Consequently, at the suggestion of Maurice Cosandey, the former president of Swiss Polytechnic Schools, my foundation’s board in 1992 appointed two economists, Paul Dembinski and Alain Schönenberger, to study financial markets. The result was a book: *Marchés financiers: une vocation trahie?* (Financial Markets: A Vocation Betrayed?).⁵ Then, in 1996, the Financial Observatory was founded in Geneva.⁶

Meanwhile, since the late eighties, I have begun to realize, as I reflect on how frugality has reached a philosophical dead-end, that we will never build a sustainable society if we continue measuring human labor and resource consumption by the same standard.

Such were my insights about finance and currency. But it is also important to consider several methodological issues. Finance and currency cannot be treated as a specific, self-referential, economic sub-discipline, dedicated to theorizing about the money supply and developing mathematical tools for managing risk and optimizing investments. That economics tends to insulate itself from the outside world is bad enough. But it is even worse when finance and currency do the same thing: that is, when they become ends in themselves, with an existence that is independent of actual goods and services, as well as those who use them and society at large! In this chapter, I will force myself to obey a methodological rule: I will not allow my terms to take on a life of their own. I will do so by systematically applying a principle that I stated at the beginning of part two: governance must be approached from multiple angles.⁷ Using

⁵ Paul Dembinski and Alain Schonenberger, *Marchés financiers, une vocation trahie?*, Éd. Charles Léopold Mayer, 1994.

⁶ See www.obsfin.ch.

⁷ Part II, chapter 1, second section: “Oeconomy Must Seek Inspiration from Governance’s Fundamental Principles.”

the Desmodo conceptual tool,⁸ I will use six interpretive grids, each of which I will briefly consider in turn: the evolution of currency and finance; our tools for understanding and evaluating currency and finance; the capacity of currency and finance to achieve governance's goals; the compatibility between currency and finance and governance's general principles; the positions and perspectives of different actors; and strategies for change. Such an approach may be a little laborious, for which I apologize to my readers; but it at least has the merit of clarity.

Why did I entitle the first section “currency, finance, and energy”? Because they are three facets of a single reality. Understand our current situation requires remembering how we got here. During the period following the Second World War, but particularly in the wake of Nixon's decision to abandon the gold standard in 1971 and the first oil crisis of 1973, the three spheres of currency, finance, and fossil energy, which were originally distinct, merged together to the point of becoming indistinguishable.

What do we mean by the “financialization of the world”? It refers simultaneously to the consolidation of financial markets (i.e., an uninterrupted flow of transactions that disregard time and space) and a gradual shift in the balance of power from companies that make things to financial institutions.

A notable feature of the “financialization of the world” is the “TINA Syndrome”: the tendency to accept Margaret Thatcher's claim that “there is no alternative.” Our first priority must be to break TINA's spell. At the outset of his 2006 report for the Rome Club, entitled *Money and Sustainability: The Missing Link*,⁹ Bernard Lietaer (whose ideas have influenced this chapter considerably) quotes Mark Kinney: “Money is like an iron ring we've put through our noses. We've forgotten that we designed it, and it's now leading us around.” The financial and

⁸ See www.exemole.net.

⁹ Bernard Lietaer, Stephan Brunhuber, *Money and Sustainability: the Missing Link*, Rome Club report, Citerra Press, 2006.

monetary system, to use a phrase that sums up Paul Dembinski's book *Finance servante, finance trompeuse*,¹⁰ has replaced relations with transactions. Transactions are abstract, disconnected from the spatial, temporal, and affective circumstances in which human beings live their physical lives.

Dembinski recalls, on this note, the words of Nick Leeson, the famous trader who triggered the collapse of the venerable old Barings Bank: "In a virtual space, you don't feel like you're dealing with real money." The same words might have been uttered nine years later by Jérôme Kerviel, the Société Générale trader. He went even further than Leeson in the direction of abstraction (if this is possible). During questioning, he revealed himself to be extraordinarily incapable of distancing himself from the mechanisms that he was unleashing. This reminds me of something that Robert Oppenheimer, the atomic bomb's "father," once said: "When you see something that is technically sweet, you go ahead and do it and you argue about what to do about it only after you have had your technical success. That is how it was with the atomic bomb." And it is said that Enrico Fermi, another prestigious physicist who participated in the Manhattan Project, exclaimed after the first atomic bomb was dropped: "It's horrible, but what a wonderful experiment!"

One senses that this is what happened with the sorcerers' apprentices of finance. I try to imagine them in their offices. They must play war games on their computers with the same adrenaline high that they play with the billions entrusted to them by their banks and their clients.

The problem is that, unlike war games, financial games have a direct impact on lives, on business, and, most insidiously, values. The impact on lives is evident. We have only just begun to feel the effects of the subprime crisis. Barkley Rosser has analyzed the unraveling of forty-six financial bubbles: in the vast majority of cases, an initial shock is followed by steady erosion,

¹⁰ Paul H. Dembinski, *Finance servante ou finance trompeuse*, Parole et Silence, 2008.

which precedes the ultimate collapse. This may well be the situation in which we find ourselves today.¹¹ Trust between major banks was badly shaken by the subprime crisis. The American government's repeated interventions to prevent the failure of major institutions was insufficient to reestablish this trust, as were the efforts of sovereign wealth funds particularly Asian ones, to recapitalize major financial actors. We are at the mercy of a general recession, the dollar's collapse, and the successive failures of major financial institutions.¹² Signs that things were headed in this direction have been visible for at least a decade. The Federal Reserve had already rushed to the rescue of the hedge fund, Long Term Capital Management (LTCM). The collapse of the Barings Banks had demonstrated the risks of the solitary and dangerous game of speculation. But no lessons were learned—except, perhaps, that the state would always feel compelled to step in to avert a systemic crisis. Something, the presence of life-guards on the beach encourages swimmers to be reckless.

Secondly, financialization affects business. The abstract, arbitrary, and absurd principle there should be a 15% return on all equity has gradually become, since the 1970s, the golden rule for any CEO who wants to keep his or her job.¹³ The world's thousand or so largest corporations, which on their own comprise more than half of the world's trade, are thus forced, because of pressures from hedge funds, equity funds, and other raiders, to follow an economic model founded on a pure abstraction.

¹¹ Barkley Rosser is a researcher for "Comparative Economics in a Transforming World Economy," specialized in non-linear economic dynamics. Note from December 2008: events of the second half of 2008 obviously confirm Barkley Rosser' diagnosis. It is worth pointing out that the events that followed the collapse of Lehmann Brothers where highly predictable.

¹² Note from December 2008: Only the massive and coordination intervention of governments from across the globe prevented consecutive failures. As for the dollar's collapse, it was avoided because of a circumstantial reason, namely the general loss of confidence in all kinds of investments, which provisionally turned treasury bonds into a financial refuge, and a structural reason, the importance of foreign holdings. Consequently, the dollar's sudden collapse would result in a lot of losers, starting with the Chinese government, which, in late 2008, increased its holdings in dollars while also sending off more and more signals that it is deeply worried.

¹³ Jean-Paul Betbèze, *Les dix commandements de la finance*, Odile Jacob, 2003.

Financialization, finally, impacts our values. Our society is poisoned by the idea that there can be winners that get rich without actually creating any wealth, and whose talent consists solely in seizing opportunities.¹⁴

To grasp the scale of the problem and the rate at which it is growing, consider a few figures. Financialization began with the dollar's release from the gold standard in 1971. The result was a rapid growth in the United States' debt, which grew from 1.2 times to 3 times GNP. In other words, printing presses have been turning non-stop.¹⁵ In December 2010, foreign holdings in dollars were estimated at \$4.44 trillion.

A second set of figures relates to the stock market. A few decades ago, my understanding of the stock market was very naïve. I saw it as a means for companies to raise capital and find shareholders who wanted to participate in a collective venture. If this were true, stock market transactions would be directly related to new financial needs, capital growth, and initial public offerings. However, according to the calculations of Paul Dembinksi,¹⁶ new financial needs represent only 3%-5% of all transactions. 95%-97% of all remaining transactions consists of nothing more than the trading of existing stock. The only beneficiary is the financial middleman who collects a commission as a result. According to Dembinksi's calculations, the ratio between corporate added value—a simple measure of their economic activity—and the total number of transactions has multiplied fifty times over the past forty years. For every euro of corporate added value today, twenty-five euros are traded on financial markets! The sums involved are so enormous that the numbers take on an abstract quality. In 2008, the French satirical newspaper

¹⁴ Note from December 2008: The scale of Madoff's fraud demonstrates how far this poison has spread. The fact that part of the financial establishment put its faith in a scheme based on profits that no one sought to understand is revealing of the mixture of greed and naïveté that years of "financialization" have produced.

¹⁵ See the Lietaer report for the Rome Club, p. 12.

¹⁶ Paul H. Dembinski, *Économie et finance globale, la portée des chiffres*, New York and Geneva, United Nations, 2003.

Le Canard enchaîné proposed a new monetary unit called the “*bouton*,” in reference to the CEO of the French commercial bank Société Générale, Daniel Bouton. One “*bouton*” would be worth 4.9 billion euros—the amount the bank lost due to the solitary actions of a single young trader. This like measuring use light years to measure one’s morning commute!¹⁷

The *Economist*, in an article from May 2008 entitled “The Oil Price Recoil,” analyzed the impact of rising oil prices on global demand and speculation. It estimates that speculative funds have invested \$260 billion in raw materials. These were liquid funds, ready to make bets on the future—twenty times more than in 2003. And, as in this type of operation only 10% of the sum is the fund’s own capital and the rest is borrowed money, the total size of the transactions involved is ten times greater, i.e. \$2.6 trillion.¹⁸ These trends are symptoms of a system spiraling out of control.

To return to postwar monetary and financial history: the Bretton Woods agreement of 1944 laid the groundwork of the current system. Even if John Maynard Keynes was unable, because of resistance from Harry Dexter White, to impose his idea of a global currency, the great powers of the day, conscious of the errors of the prewar period, established a system that could pacify and stabilize international exchange. The dollar became the world’s currency. In return, the United States assumed all the responsibilities that come with power by guaranteeing the dollar’s convertibility: \$35 for an ounce of gold. Exchange rates between major currencies could be regularly renegotiated. The International Monetary Fund (IMF) was established to steady the system in the event of a crisis. At the time, currency and finance belonged to sharply distinguished realms. Ever since the creation of unified and centralized states, first kings, then

¹⁷ Note from December 2008: In the second half of 2008, American, European, and Chinese financial rescue packages were denominated in hundreds of billions of euros and dollars. For the average citizens, who throughout the year is told that coffers are empty, this is enough to make one lose one’s faith in the system and conclude that a double standard very much exists.

¹⁸ See Paul Davidson in the magazine *Challenges*, July-August 2008.

national governments have exercised the privilege of coinage, which in many ways is the ultimate symbol of the state's sovereignty and authority. As such, coinage belongs to the public sphere. Finance, on the other hand, with its investors and stock markets, belonged to the private sphere. In a chart found in the annex, I show the main changes that have occurred since the seventies. They are the result of three overlapping processes.

The first is technological change. With the telephone, computer technology, and particularly the Internet, the global financial and monetary systems have become interconnected. 1973 saw the creation of SWIFT (Society for Worldwide Interbank Financial Telecommunication), which automated and accelerated bank-to-bank transfers. In 2006, three billion messages were exchanged each day, almost instantaneously, between 2,400 members.¹⁹ Computerization means that the corporate or individual assets are no longer treated simply as deposits, but also as investment. In France, what used to be our old post office, with its quaint checking accounts, has now become a Banque Postale (Postal Bank) that makes us feel guilty when we do not make the most of its fancy financial offers.

After Nixon ended the gold standard, currency speculation quickly increased. According to Bernard Lietaer, the buying and selling of currency with no connection to the exchange of goods and services represents 97% of global currency trading. Exchanges in which goods and services are traded represent only 2%-3%. Currencies have become a financial product like any other, on which one can speculate with the help of derivatives. This is proof of the way in which currency and finance have become integrated. Following the self-interested advice of financial middlemen, it has almost become a moral duty for each of us to make money off of wheat, oil, and currency ... Everything can be a bet. Everything can be played.

¹⁹ Paul H. Dembinski, *Finance servante ou finance trompeuse*, op. cit.

In addition to technological change there is social change, and, in particular, demographic change. In wealthy countries, an ageing and affluent population fears for its well-being and no longer relies on family and local solidarity to protect itself from life's risks. As we have already mentioned, faced with aging populations—today in Japan and the West, tomorrow in China, and sooner than we might expect elsewhere—each one of us confronts a new version of an eternal question: who will take care of me when I'm old? The traditional answer was transgenerational: I take care of my parents; I take care of my children; when I'm old, my children will take care of me. But when the period of time during which society must take care of me grows considerably longer and when society produces fewer and fewer babies, security must be sought elsewhere.

Furthermore, studies show that the wealthier people get the more they tend to worry about their future well-being. The poor, after all, deal with precariousness every day. It inures them from fear. In a country like France, where long-term unemployment and insecurity are the greatest dangers, members of my own generation—the baby-boomers—have no instinctive knowledge of what an unpredictable world is like. Our society celebrates efficiency and performance. We want to control our own fertility, intellectual productivity, ageing, and future. “Consider the lilies, how they grow”, says the Gospel. “They toil not, they spin not.” This is one problem we have solved: there are no more lilies in our fields. The result is that “resources accumulated by pension funds and other benefit institutions are estimated to be worth 15 trillion dollars and represent 30% to 60% of household savings.”²⁰ Thus in addition to traditional financial actors, our world is now full of powerful financial actors who are our metaphorical doubles: pension funds embody our desire to be fully insured, while hedge funds express our dreams of winning the lottery. Perhaps the most important aspect of this demographic and sociological change is that it rests on the premise that society is founded not on long-term trust or

²⁰ Paul H. Dembinski, *Finance servante ou finance trompeuse*, *op. cit.*

the exchange of care-giving, but on abstract, anonymous, and ephemeral transactions—in other words, on the very negation of social bonds. It is particularly disturbing that pension funds, whose purposes is to invest for the long-term by transforming our current savings into a guarantee of financial security twenty years down the line, participate so willingly in a casino culture based on immediate gain.

The third major change concerns energy. Our society is even more obsessed with gas than with security. However, nature being (for once) poorly designed, major fossil energy reserves lie in a handful of small and under-populated countries, which have proved incapable of transforming the manna of oil into a productive investment. This trend was set by the two oil shocks of 1973 and 1980, which amounted to a sharp increase in the tribute demanded by the owners of fossil fuel resources. This was the golden age of “petrodollars.” Banks, needing some place to invest this new capital, but lacking the entrepreneurial skill required to generate new wealth, embarked on risky schemes, notably loans to developing countries, often dictatorships. The result, following a sharp increase in interest rates, was the “debt crisis.” The reason why most people viewed this crisis as illegitimate is obvious: the purpose of these loans was not need or an ability to absorb them, but rather the need for an outlet in which to invest excess capital. If there is genuinely global currency today, it is without question oil. I am rather surprised that it is not used as a unit of account. We speak of the change in the price of oil in terms of dollars and euros, but it would be more meaningful to tracks the growth of GDP, the dollar, the euro, etc., in terms of TEP (tons of equivalent petroleum). Moreover, oil nations regulate the value of their oil-currency by producing more or less. If one considers currency’s three functions—means of payment (a good that everyone constantly needs, which can be traded for anything), unit of account, and store of value—oil has all the attributes of a currency and OPEC all those of a

central bank. The comparison can be taken even further: the “oil curse” prevents countries with vast reserves of “black gold” from achieving genuine economic development, just as the influx of silver and gold from the New World ruined the Spanish economy in the Age of Discovery. Thus, living at the tail end of the transitions that began in 1971, we find ourselves in a unified market, in which time, space, and social bonds have disintegrated into billions of abstract transactions, while currency, finance, and energy are managed in a highly integrated fashion.

2. Making Currency and Finance Serve Communities and Contribute to a Better Understanding of Exchange

I will now consider the monetary and financial system from three perspectives: its basic concepts and its principles of knowledge and evaluation; its suitability for achieving governance’s general goals; and, finally, the degree to which it adheres to governance’s general principles.

The following analysis of the monetary and financial system in terms of its basic concepts and its principles of knowledge and evaluation is summarized in the chart found in the annex.

The root of the financial system’s problem lies in the way of thinking upon which it depends. As Bernard Lietaer rightly reminds us, two important but unacknowledged hypotheses about money underpin economic theory as a whole.²¹ The first holds that money is neutral. It is a merely passive tool, one that facilitates exchanges that would take place anyway. This tool is presumed to have no bearing on the types of transactions effectuated, nor on the kinds of investments made—and even less on relationships between the people who use it. The second

²¹ Bernard Lietaer, *Mutations mondiales, crises et innovations monétaires*, op. cit.

hypothesis holds that money is what it is and that we can do nothing about it. Both hypotheses are false. Money and finance have two historic purposes: fostering social bonds within or between communities through the exchange of goods and services; and bringing savings into contact with human needs, particularly the need for capital. These purposes have become, however, increasingly invisible.

Beyond its practical value—the acquisition of things that interest me and that someone else owns and is prepared to relinquish—exchange is also valuable because of the bonds it creates. This has been observed since the dawn of time. Jean-Michel Servet, in his illuminating article on “paleo-currencies,” emphasizes that exchange is a bond that does not simply end with a transaction’s conclusion (i.e., payment for a good or the reimbursement of a debt).²² In a way that recalls how the cohesion of physico-chemical systems are maintained by exchanges between atoms and molecules, a community only exists by preserving the bonds between its members. These bonds are perpetuated through an uninterrupted chain of material, social, or symbolic exchange. Communities and relationships only lose steam when they are not used. Exchange exists from the moment communities exist, and communities exist from the moment permanent exchange flows occur. Money is both a means of exchange and a symbol of community. From whence flows an important corollary: there are as many currencies as there are communities seeking to consolidate social bonds through exchange. For instance, for members of my generation, the creation of the euro was of enormous symbolic importance. It is still too early to say if the euro will live up to its promise of prosperity. As has always been the case throughout the history of European construction, we find ourselves at present in a precarious state. The creation of the euro will lead us, sooner or later, to harmonize economic and fiscal policies. But beyond these material effects, I am struck by the symbolic significance of the disappearance of

²² Jean-Michel Servet, “Monnaie et esprits du don,” in *La part de l’oeil*, vol. 1, Brussels, 2008-2009.

borders and the use of a single currency. I feel like a foreigner in countries within the Union in where I have to exchange currency before I cross a border. In the Eurozone, I feel at home. The adoption of a common currency is truly a foundational act for the community. From the standpoint of the community's cohesion, the goal must be to maintain, intensify, and to render visible exchanges occurring within it. Currency is a privileged means to this end, though it is not the only one. Many networks are currently being created, like online social networking sites, of which Facebook is the most important, which depend on exchange but not money.

Maintaining communities through the exchange of goods and services raises three questions. First, what is the scope of the community? Second, what is the community's mean of exchange and what makes it reliable? Third, what keeps the chain of exchange uninterrupted, thus preserving a community's cohesion?

The first question, then, is that of a community's scope. This scope defines a privileged sphere of exchange. Complementary currencies that are being developed at present are always defined in relation to a community. For this reason, Bernard Lietaer remarks: "A currency is a sign of agreement." A global currency, like the postwar dollar, expressed a desire to transcend national rivalries. Today, this is the euro's primary symbolic function. Communities, ranging from the local to the global, overlap with one another; by extension, so do currencies.

Second question: what are the means of exchange used? Paul Dembinski writes: "For a monetary order to be sustainable, it must ward off three concerns that any means of payment will arouse: the anxiety of counterfeits, the fear of decline in or loss of value, and the risk of non-acceptance by a third party."²³ Considered solely as a means of exchange, a currency exists only to the extent that people who use it trust each other. This goes for official currencies as well as for complementary currencies. During the Argentine crisis of the mid-1990s, a global bartering

²³ Paul Dembinski, *Finance servante ou finance trompeuse*, *op. cit.*, p. 43.

network was born through a federation of local bartering clubs. At the end of the twentieth century, this global network consisted of several million people. Some local governments even allowed taxes to be paid in this currency. The global bartering network issued “*creditos*.” It collapsed shortly afterwards, as a result of a massive counterfeiting scheme.

Traditionally, it has been a central authority—a lord, a king, a central bank—that guarantees a currency’s value and thus makes it trustworthy. This is why the concept of currency has often been associated with central powers. But one must not confuse the function that has to be fulfilled with the particular way in which this is done at a given moment—there are different ways to do this, depending on available technology. Thanks to computerized management systems it is today possible to control collectively the exchange—and thus the currency in which this exchange is denominated—with no need for a central authority. Moreover, even with official currencies, electronic exchanges occurring between banks at an international level have become the system’s collective guarantors.

Third question: what keeps the exchange going? What happens to a community when some of its members break the chain of exchange, refuse to play the game, and turn a means for circulating goods and services into a hoarding mechanism? This is what John Maynard Keynes famously called a “liquidity trap.” This was the essential question asked by Silvio Gesell, a fascinating figure whom Keynes quotes, but who is forgotten by mainstream economics. Over the past few years, he has become a major intellectual inspiration for promoters of complementary currencies.²⁴ Gesell’s idea of a “melting currency”—a currency with a negative interest rate—was aimed at ensuring the continuity of exchange and to punish hoarding. Whoever interrupts exchange and thus penalizes the community must be punished in turn. The exchange currency must lose its value if it is not used. This depreciation is known as demurrage

²⁴ Denis Clerc, “Silvio Gesell : un prédécesseur de Keynes ?,” in *Alternatives économiques*, April 1998.

or, as Bernard Lietaer calls it, a “parking fee.” In his book, *Of Human Wealth: New Money for a New World*,²⁵ Lietaer describes, from this perspective, medieval currencies that were devalued approximately every five years, an incentive that kept them in permanent circulation. Drawing on the work of historians, Lietaer sees the control that monarchies asserted over these currencies, as well as the resulting scarcity of means of exchange, as one of the major factors triggering the great crisis in which Europe wallowed through the Middle Ages. The crisis culminated with the famines of the late thirteenth century, then with the plague of the mid-fourteenth century. Most “miles” programs—those de facto currencies that airlines use to reward faithful customers, though they can now be used to buy much more than free plane tickets—use similar mechanisms, in which depreciation encourages exchange.

From the preceding overview, four major ideas are worth retaining. First, the means of payment that promote exchange within a community do not necessarily need to be denominated in the same units as those that are used for savings and investment. Second, every community has the right to create its own means of exchange, i.e., its own currency. Third, means of exchange depend on trust. There is dialectic between trust-building and exchange-building: when one weakens, both weaken. Fourth, exchange currencies explicitly or implicitly involve a system of depreciation, which penalizes hoarding while encouraging savings and investment: if I know my currency money will soon lose its value, I’ll either spend it or invest it. This is precisely what is happening in China. Money has a real negative interest rate and there are no retirements: hence the massive investments, particularly in real estate.

But a new question must be asked: what exactly is it that we exchange? And with whom? Let me begin with the second part of the question. There is currently much talk about “development financed by debt”. There is no question that American deficits—the printing of

²⁵ Bernard Lietaer, and Stephen Belgin, *Of Human Wealth: New Money for a New World*, Citera Press, 2006.

money, the Fed's efforts, in light of the subprime crisis, to avoid recession by lower interest rates, the loose monetary policies of Alan Greenspan—underwrote, over the past few decades, global growth. If some countries blamed the US for its lack of monetary and fiscal discipline, they secretly whispered: "Let's hope it continues; if not, we're in for a recession." For a non-specialist like me, however, who is not interested in the details of money creation, one question remains. If there is a borrower, there must be a creditor. Who is he? Without one, it's not really a debt. It's more like the beginning of a game of Monopoly: everyone must be given a certain quantity of "money" for the game to begin. But when one considers the three-player game played by ourselves, others, and the biosphere, it is clear that the way money currently functions says little about the flows between these three players—one of which, the biosphere, is never even consulted. Yet the preservation of the biosphere for future generations is a critical feature of oeconomy's specifications. Not only is this actor endangered, but we do not even have the measuring tools that would allow us to determine just how much it has been hurt. As I mentioned below, we have to be able to describe how the "world system" evolves.²⁶ Considered as a unit of account, our present-day currency offers us no tools for measuring this evolution.

The mystery thickens when one attempt to answer the other half of the question: what exactly is being exchanged? It confronts us with the veil of ignorance that money throws over the reality of exchange. Not only does money tell us little about reality, but it obscures it, preventing us from understanding others and the world in which we live. It is the logical consequence of what I called, when discussing territories, our "lumpless society"—as well as what I would call our "dimensionless society." Exchange is both a relationship and a thing. The good or service obtained has physical qualities, but it can also be defined by everything that contributed to producing it, that is by four types of capital and three kinds of resources. Yet reducing this

²⁶ Part two, chapter one, third section.

complex contents to a single measure—monetary value—entails an extraordinary loss of information. It is a kind of logical swindle that would not even fool a high school student. The mistake consists in the presumption that all dimensions are equal, since, at the end of the day, the rational consumer (i.e., the buyer) maximizes a single function: his satisfaction. But what exactly does this prove? When we eat, everything ends up in our stomach; when we buy food, we choose between meats, vegetables, and so on. But does this mean there is no difference between a protein and a starch? Should we not seek to balance different food types? Do nutritionists think solely in terms of the number of qualities consumed, on the ground that all qualities are equal? Do mathematicians conflate vector space with scalar products? Any practitioner can tell you that information is less reliable the later it appears down the chain. If it is degraded at its very source, no reverse movement is possible. The final user of the information becomes a victim of the initial emitter's choices. This is what happens with money. The conclusion is obvious: money, as a unit of account, must, all the way through the final user, consist of the richest information possible, relating to production processes and to product components (each of which is irreducible to one another).

The ignorance that money induces can be contrasted to the detailed accounting systems that society has at its disposal for ensuring that we all—individuals, families, and companies—can know where our money goes. A family needs to know what it spends on food, transportation, housing, leisure, etc. Companies respect detailed accounts. We are perfectly capable of gathering rich, multidimensional information when we need it. It is thus all the more revealing that we have refrained from doing so in the case of exchange.

The same kind of ignorance that money creates also occurs in finance. As an example, let me mention once again my experience as head of a foundation. Our board became interested in

the ethics of our investments. I looked into ethical guidelines for asset management. At present, it is extremely difficult to reach a conclusion about a company's social impact. I recall a conversation with a manager of ethical investments well known in Switzerland. I asked him what his criteria were, given his limited human resources, for determining whether to include a company's shares in a portfolio. He began by excluding anything having to do with tobacco, alcohol, drugs, and arms. The next major criterion was "corporate governance." Convinced that corporate governance is a passing fad, as is illustrated by the long-term prosperity of family companies, whose primary asset is a will to endure over time, I expressed my surprise at what struck me as an odd choice. He replied frankly: "Perhaps, but it is the only criteria that we can easily investigate." It's the classic story of the drunk who looks for his lost keys under a street lamp—not because he lost them there, but because it's the only place he can see.

Even the most powerful "ethical rating" agencies limit themselves primarily to analyzing companies' environmental and social reports. Looking further would require investigative tools that they lack. The question of the cost of access to information proves in this instance decisive. The high cost of access to information explains the importance of international rating agencies like Standard & Poor's and Moody's, even though they are regularly criticized for their failure to detect major problems (as with Enron and the subprimes). The conclusion is obvious: precise methods for evaluating companies will only exist if relevant information is gathered at the grassroots, as a by-product of daily activities. Supply chain agreements and ISO sustainable supply chain norms will lead to the implementation of such information systems.

Do we at least have reliable indicators on the quality of financial middlemen? Those who provide their clients with relevant information are rare. Some use the same specious arguments as our politicians: they take credit when things are going well and blame the stock market when

they're not. Four sets of data make it possible to evaluate the activity of financial middlemen: portfolio turnover, the phenomenal acceleration of which I mentioned previously—proof that that interests of financial middlemen have trumped those of their clients; long-term profits (a performance index for managers must always cover performance over at least five years); the investment climate, necessary for understanding what the middleman can reasonably grasp in a genuinely professional fashion; and, finally, investigative tools for evaluating the quality of its investments. Though this data is easily available, it is not often emphasized.

The question of the social consequences of one's action is relevant not only to major companies and their financial officers. It also concerns those financial institutions that like to present themselves as the paragons of virtue. I am thinking in particular of microfinance institutions offering microcredit. Thanks to Yunusmania, they would appear to the very models of social utility. But is this so obvious? What aspect of their actions is actually measured? The need to believe, the need for certainty is so great that, once we have lost our faith in the market's efficiency, we now celebrate the dawning of the age of microcredit as it prepares to take on global poverty. Yet things, regrettably, are not so simple. In March 2008, Jean-Michel Servet presented an astonishing paper at an international conference on micro-intermediation held at the University of Orléans. He demonstrated that, as with ethical investing, the path to rigor is long.²⁷ He begins with a quote from Emmanuel Bove: "Nothing is as misleading as good intentions, as they give the impression of being goodness itself." He then quotes a study financed by Action Aid (a major international solidarity NGO) and Unayan Parishad (a Bangladeshi NGO led by

²⁷ Jean-Michel Servet, "Comment définir la responsabilité sociale des divers acteurs contemporains de la microfinance ?" ("How Does One Define the Social Responsibility of the Various Contemporary Microfinance Actors?"), Journées internationales de microintermédiation, March 2008.

Professor Qazi Kholiquzzaman)²⁸ on microcredit's actual impact in Bangladesh. In other words: a study of how faith is practiced in the Vatican! The conclusions are astounding: "As a general rule, microcredit does not offer borrowers an economic basis allowing them to exit the vicious circle of poverty to access a significantly higher income and standard of living. Moreover, many become caught up in debt's vicious circle and fall deeper into poverty." Having become aware of these consequences, our foundation has done international work, the usefulness of which has now been established, to promote criteria pertaining to the social responsibility of microcredit institutions.²⁹ This brief consideration of microcredit proves that making information available that facilitates a better understanding of reality and impact of currency and finance is required in every monetary and financial domain.

We are no better placed for evaluating the state of the world system or the development of various kinds of capital. A normalized approach should be adopted at an international level so that evaluation can be conducted at different geographical levels based on precise rules for aggregation, as some entities—such as intangible capital or biodiversity—cannot be added up. In 1990, the United Nations Development Program created the Human Development Index. It is a composite index for evaluating the degree of human development. It considers a variety of indicators of economic prosperity and living standards, primarily life expectancy, education, and standard of living. It has, in part, changed the way we look at different countries and is a good example of the impact of indicators on worldviews. But clearly, it does not address the problem we are currently considering. We are bombarded with figures; yet we know almost nothing about what really matters.

²⁸ Qazi Ahmad Kholiquzzaman, *Socio-Economic and Indebtedness-Related Impact of Micro-Credit in Bangladesh*, Dacca, The Universal City Press Limited, 2007.

²⁹ Finance solidaire : <http://finsol.socioeco.org>.

Making currency and finance once again serve the economy thus requires that we simultaneously rethink their foundational concepts and the information systems that they generate in order to better gauge their impact.

3. Subordinating Currency and Finance to Governance's Goals and Principles

Currency, finance and goals of governance

Let us now turn to currency and finance as seen from the perspective of governance's goals. Let us begin with governance's first goal. Do currency and finance contribute to a more harmonious relationship between humanity and the biosphere? Given what we have been saying, the answer is "no." They offer no information system providing us with knowledge about these relationships, and even less about their degree of harmony. The abstract character of currency and finance, along with the ubiquity they acquire through computer technology and the Internet, relegates their relationship to the biosphere to the furthest recesses of our consciousness. Ancient societies were predatory, but this predatory behavior occurred before their very eyes. Consequently, it could be denounced.³⁰ If the relationship between humanity and the biosphere is to become once again concrete, it literally has to hit us in the face, whether as acid rain or as climate change. In the three-person game of borrowing and lending, the biosphere is the forgotten player, from whom the others borrow without ever remembering to repay.

The second goal of governance is peace. Do currency and finance contribute to security and peace? Yes and no. Oeconomy is Janus-faced. One face is peaceful, because it builds relationships. The other is warlike, as it exacerbates competition over scarce resources. It is the same with currency and finance.

³⁰ See on this issue the book by Matthieu Calame, *La tourmente alimentaire*, *op. cit.*

I would also place financial relations between nations on the side of peace. In doing so, I am sure that I will enrage some people. The trade surplus that China has accumulated in relation to the United States, some \$1.2 trillion, can in the last resort be seen as a kind of export credit benefiting Chinese companies. Will it ever be reimbursed? This is highly unlikely. But in the meantime, it creates *de facto* solidarity. China and the United States are bound to one another. The Chinese economist Ping Cheng, at a recent meeting of Economists for Peace and Security,³¹ made this point very clear: if the dollar collapses, the first victim would be China's leadership, which public opinion would blame for trading the people's labor for monkey money. The only way for China's leaders to avoid this scenario is to carefully invest, as they have already begun to do, their enormous treasure in Western companies. They must do so prudently: it is important not to heat up the water too quickly, lest the frog jump out of the pan before it is cooked.³²

War, the other side of Janus' face, is obviously disconcerting. The financialization of the world has led companies based in some nations to acquire assets in others. This is an eminently positive development—as long as exchange remains equitable. Yet while the existing financial system ensures the security of short-term transactions, it does not, over the long term, offer the only guarantees that matter: the legitimacy (subjectively defined) of contracts and trust between contracting parties. We saw this with the Sarbanes-Oxley Act: the American government was concerned more than anything else with preserving trust in the system. The disappearance of trust-based relationships is also apparent in the trend towards nationalizing oil and gas companies: nothing, if not war, will prevent a state from recuperating its underground resources—especially when international law still rests on an archaic conception of

³¹ The conference was held in 2008 by the FPH at the Association of Economists for Peace and Security and the Initiative for Rethinking the Economy. It was devoted to the subprime crisis.

³² The “frog syndrome,” which is often used in ecology, refers to the fact that a frog that is placed in cold but slowly heating water does not leap out of the pan and dies without realizing what is happening to him, while if the water is heated quickly, he jumps out and flees.

sovereignty—if it deems that an investor has taken advantage of its position of strength. The same process can be seen in populist movements that encourage governments to “reclaim national wealth.” But beyond the problem of nationalizations without compensation is the question of ecological debts—and this question will literally blow up in the face of the international community as rapidly growing countries like India and China eventually address the question of how world’s natural resources should be shared. It must be posed calmly. Otherwise, we risk military escalations, of which history offers plenty of examples.

Governance’s third goal is social cohesion. Here, too, the verdict is unassailable and the grade poor: relationships unite while abstract transactions isolate. Finance also isolates its primary beneficiaries from the rest of the world, as well as companies from their employees. The only beneficial side-effect is that billionaires have created a new generation of foundations. I obviously have in mind Bill and Melissa Gates, as well as Warren Buffet and George Soros. Giving a significant share of an immense fortune to a foundation dedicated to the public good changes the meaning of relentless accumulation, making it more like a tax levied at a global scale than the privatization of added value for the benefit of the few. It is no accident that the action of this new kind of foundations is resolutely international, unlike most other American and European foundations. But however laudable the actions of a few isolated individuals might be, it is woefully insufficient for changing the entire rationality of a system. Finally, as we have seen, the current monetary system does not allow for the opening-closing of territories, which is critical to social cohesion.

Governance’s fourth goal is human development. On this issue, too, the existing system falls woefully short. I am not referring to the issue of poverty because, as we saw in part one, the effects of the monetary and financial system in this regard are ambiguous. One could, for

instance, credit it with the rebalancing the world to Asia's advantage. On the other hand, the system demoralizes society, as it destroys trust. The inability to make long-term commitments, with all the resulting risks; the desire to win by being the cleverest; and the reduction of others as well as the biosphere to abstract entities: all of this is the very antithesis of mutual trust. We saw this in the spring of 2008, when speculative funds raised the price of essential food products. On the one hand, we have players whose great success is totally abstract, given that millions of dollars more or less brings no other satisfaction than that of proving one's cunning; on the other, we have food riots. Instead of trust in others, we have confidence "in the system," as if the system existed on its own, independently of "others." But defiance is contagious, extending to institutions and to their relations with one another. The subprime crisis, however it ends, will have lasting effects because ordinary citizens have discovered not only that major banks behaved irresponsibly, but that they do not even trust one another.³³

Currency, finance and principles of governance

Finally, governance's fifth goal is the preservation of the interests of future generations. Yet again, the system earns an unimpressive grade. Consider financial derivatives. As bets on the future, they conflate the future with the present. They crunch time. Everything depends on a minute or a trimester. The interests of future generations count for little. This is true even of pension funds, a wonderful tool for long-term planning: they are concerned with my future as a senior, but not of that of my children or grandchildren.

If the system does not achieve governance's goals, does it at least respect its fundamental principles? (Our conclusions, once again, are summarized in the chart in the annex).

³³ Note from December 2008: The second half of 2008 has confirmed this analysis. What we call the "credit crunch" is in fact an expression of generalized distrust.

In the first place, the system cannot be deemed legitimate. It is led by irresponsible people; it does not obey the fairness principle; it follows procedures that are generally opaque (even for the actors themselves, as we saw with the securitization of subprime mortgages); and it does not satisfy the principle of least constraint, whether because it objects to it on legal grounds or because it raises hurdles to the organization of local exchanges.

Democracy and citizenship are also poorly accounted for. One of the major challenges of contemporary democracy—and even its very condition of survival—is to provide citizens with the tools for understanding the complex scientific and financial questions of the day upon which our future depends, yet without oversimplifying them.³⁴ However, the financial system, whether intentionally or not, has cast a veil over its activities, making them technical to the point that they cannot be understood by ordinary citizens or, for that matter, by regulators themselves. Specialists have told me that during the “Basel II” negotiations over the world financial system, even government experts could not follow the details of the debate. The regulations themselves were decided by a small number of key players. Do these players even understand themselves? The inefficiency of internal checks made apparent by people like Jérôme Kerviel, the trader at French bank Société Générale who lost 50 billions euros before being stopped by his supervisors, gives one reason to think otherwise. “Creative accounting” triggered the Enron scandal; “creative finance” set off the subprime crisis. A good democratic rule would be to allow the introduction of new tools only to the extent that they can be understood and evaluated by reasonably educated citizens. “Good” popularization does not turn complicated questions into slogans, but empowers citizens to address the major challenges facing their societies. When will there be a European citizens’ panel on finance?³⁵ We don’t put steering wheels in the hands of minors. We require

³⁴ I have discussed this in part one, chapter five, part three.

³⁵ In chapter four, section two, I touch on this issue while discussing citizens’ panels.

young people to pass a test to ensure they know how to control a vehicle. Yet we have no equivalent when it comes to putting the steering wheel of an infinitely more powerful machine into the hands of young traders or bank managers.

Partnerships between actors bring us back to the idea of long-lasting contracts. Such contracts no longer exist for financial and monetary actors. However, should they wish to, pension and sovereign funds could, in the coming years, become major players through a new social contract negotiated between various societies and even (if I can be permitted to evoke entities lacking juridical personality) between humanity and the planet.

As for the articulation of levels of governance, it is really only practiced by mutual banks and insurance companies.³⁶ If, as I believe, new monetary and financial tools will lead us to articulate the levels of governance in new ways, the social learning process spanning a half century will prove extremely useful. It will provide the social economy's actors a significant comparative advantage. Will they make the most of it?

4. What Strategy for Change Should Be Pursued? Which Actors Can Help?

In what follows, I will begin with a general consideration of how various social actors are positioned in relation to finance and currency, before turning to the framework I have proposed for thinking about strategies for change.

The Position of Different Actors

³⁶ See Étienne Pflimlin (the chairman of Crédit Mutuel), "Les mystères de lagouvernance des banques mutualistes," speech given at the École de Paris, January 11, 2008. Downloadable at www.ecole.org.

I divide actors into four groups: intellectual and symbolic actors (philosophers, religious figures, academics and researchers, the media); social actors (women, people in positions of power, outsiders—this being but a small sampling of people that I found particularly relevant to finance); economic actors (transnational corporations, unions, financial actors, actors in the solidarity economy); and, finally, regulatory actors (public actors, political leaders and parties, local government, civil society organizations). We shall consider them in this order.

The first group that is relevant to finance consists of philosophical and religious figures. Their perspective is of considerable importance. It is particularly welcome at a time when the ideology of technology and efficiency claims to have resolved the problem of meaning. Five philosophical perspectives deserve mention. The first is the biblical notion of the Jubilee.³⁷ It stipulates that every forty-nine years (i.e., seven times seven), the clock must be set back to zero. Jewish slaves were freed. Land and (to use modern terminology) natural resources were returned to their initial owners. True, even in the ancient theocracy of Israel, the Jubilee was never fully implemented. Moreover, non-Jews were denied its benefits and restitution only applied to urban goods. Even so, the concept of the Jubilee is a very powerful one. It is the ethical foundation of inheritance laws: because power leads to more power and wealth to more wealth, society must develop a compensating mechanism. This was the principle behind Jubilee 2000, an international coalition of movements from over forty countries which, in the late nineties, advocated cancelling the Third World's debt. In my view, its analysis was not always as sharp as it might have been. It also took it a while to make the very legitimacy of the debt its primary focus. Even so, the Jubilee concept made it possible to distinguish between debts that were either incurred by democratic countries or that promoted development, and those that did neither. Whatever its

³⁷ Leviticus 25: 8-24.

limitations, the movement had an undeniable impact. It played an important role in advancing the movement to restructure and partially cancel the Third World's debt.

The second perspective is that of Greek philosophy. Aristotle distinguished *oeconomics* (the art of making balanced use of natural resources) from *chrematistics* (which is enrichment for its own sake). This distinction remains relevant to differentiating exchange from hoarding.

The third outlook comes from Christianity. It has always been riddled with contradictions, many of which are still our own. In particular, it is marked by the tension between solidarity and divine time, on the one hand, and economic efficiency and human time, on the other. Two historical turning points are important in this regard: first, the mendicant orders of the thirteenth century, when the Middle Ages turned to human time and efficiency³⁸; and, second, Protestantism and Calvin. Calvin draws a clear distinction between personal loans and participating in investments and risky ventures, in which receiving one's share of profits is justified: once again, we have the distinction between money-as-means-of-exchange and money-as-investment.

A fourth perspective comes from Hans Jonas, who proposed the expanded definition of responsibility that we have made our own. Understood in this sense, the financial world's responsibility extends to the impact that finance has on society's values.

The final perspective is that of Islam, which is even more categorical than Christianity in forbidding interest-based loans. Muslim banks, however, have proven successful in reconciling (in a manner reminiscent of Calvin) heaven and earth.

What I find striking about contemporary religious leaders is that, even though Christian movements are often at the forefront of the push for financial ethics, they have a difficult time articulating a comprehensive intellectual alternative to currency and finance. One almost gets the

³⁸ Jacques Le Goff, *Un autre Moyen Âge*, *op. cit.*

impression that they find plunging into the mysteries of the financial and monetary system a sign of compromise. An economist like Paul Dembinski, who teaches financial ethics at the Catholic Institute of Paris, is nonetheless representative of a new generation, which no longer confines itself to a purely moral posture of denunciation (which is as typical of socialists as of Catholics), but which seeks rather to understand the system from within. This is indispensable if one wants to change it.

As for academics and researchers, they are often tempted to run with the hare and hunt with the hounds. Their situation is similar to that of the energy sector, in which only energy-producing companies can offer energy specialists promising careers.³⁹ It can be seen in the training of mathematicians: the new technologies arising from risk management and information encryption have become two of their most important career options, and are far more lucrative than research which, because it has no immediate financial or economic applications, is often deemed esoteric.⁴⁰ Finance's sophistication lends itself to specialized disciplines, especially when they are likely to lead students to good jobs. That said, it is not my intention to review *all* critical voices on this issue, as they are dispersed across many different sects. This could, however, change.

More troubling is the position of the media. The role that the media plays in disseminating detailed stock-market information belongs to a broader effort of instilling into our society with financial values across the board. As I see it, the greatest problem is ignorance, which is the mother of conformism and ready-made thinking. In France, a magazine like *Alternatives économiques*, which has successfully positioned itself midway between militancy

³⁹ See part one, chapter four.

⁴⁰ Note from December 2008: The second semester of 2008 was brutal for specialists in mathematical finance. We were unsurprised witnesses to the kinds of intellectual contortions typical of such situations: "science is neutral, only its applications are not"; "financial mathematics is by definition useful, but not when used by irresponsible banks," etc.

and professionalism, fulfills a genuine public service, contrary to the audiovisual media (even when publicly owned). It should be mandatory for journalists to receive training in finance and financial ethics.

To what extent is our society able to resist these trends and make new proposals? Consider the troubling example of movement for women's rights. Most feminist movements emphasize male domination of women, particularly in the economic realm: their subordinate place in the labor market, the lack of a fair way of evaluating what domestic work's contribution to family and national prosperity, difficult access to credit—these things are all perfectly true. But they overlook an important feature of our society: the fact that women own a significant share of capital. In Europe, a majority of capital is owned by women, for obvious sociological and demographic reasons: inheritances are now split equally between men and women, but women outlive men by six or seven years. Consequently, elderly women would appear to control an important share of capital. How can one reconcile this fact with a critique of women's disempowerment—while also claiming that money makes the world go round? How can “powerless” groups like women be simultaneously gripping power's levers? This apparent paradox can be easily explained if one introduces a third, cultural factor into the equation: women ask men to manage their assets. This problem belongs to a cultural rather than a strictly financial realm. If the women's movement were to address this contradiction between property and power, and thus women's role in asset management, it might have a considerable impact, particularly if they were able to propose an alternative grounded in “feminine” values.

The second interesting social group to consider is those in power. “Elites,” as they tend to call themselves, strike me as unlikely, for the time being, to offer innovative thinking about money and finance. First, because they share the ethos of efficiency that finance embraces.

Second, because financialization puts economic elites on ejectable seats, which makes them careful to avoid being excommunicated from their own milieu. George Soros in the United States and Michel Albert or Jean Peyrelevade in France are fortunate exceptions. But it is worth noting that they usually start publishing books only once they have left business. Given the constant pressure that bank and company presidents face, this is understandable. But it weakens the impact of what they have to say: in these circles, you lose your influence when you are no longer in business. During the time of the Iron Curtain, only once you “made it to the West” did you speak freely. What we need is a group of former top financial executives who have the guts to say that the emperor has no clothes and that the time has come to take a new path.

The excluded, finally, are particularly concerned with the way in which money and finance operate. It is with good reason that Jean-Michel Servet speaks, in this regard, of “financial exclusion,” and of not reducing it to access to credit.⁴¹ Exclusion can also refer to the situation of southern countries in relation to the management of savings (when they exist) and risk, as when they are deprived of access to insurance. It is also in this milieu that many solidarity economy experiments are being pursued. It is one of the realms that has the most to gain from a reinvention of monetary and financial systems at a local level.

I now turn to economic actors. We can hope for a great deal, in upcoming years, from new thinking among trade-unions. Unions were forced to endorse, whatever one chooses to call them, pension funds and individual retirement accounts. In any event, they have not been able to ignore the decisive role that these funds play in controlling the productive apparatus. They face a radical contradiction: on the one hand, with the accelerated pace of financialization, companies are under increasing pressure from financial capital, which makes work increasingly precarious; on the other, employee pension funds are currently among the primary agents of the process of

⁴¹ Jean-Michel Servet, “Monnaie et esprits du don,” *op. cit.*

financialization. The desire to resolve this contradiction could play a decisive role in encouraging finance, with some pressure from pension funds, to once again adopt a long-term perspective, which is, after all, their true vocation. Unions might also find allies among managers within major corporations. Stock options have bought their complicity, while simultaneously isolating them within corporations as a whole. These sectors generally gain little from their subordination to nomadic finance, which cares as a little about the reality of productive processes as it does of the human, technological, and social complexity or merging and tearing apart large organizations.

I see the possibility of new alliance, based on the concept of global supply chains, between investment funds, management structures, and unions.

It is even possible to imagine financial actors themselves making positive changes. The subprime crisis proved that the financial world was incapable of disciplining itself, contrary to its own claims. The Association of Economists for Peace and Security did a study with the IRE in early 2008, in which it consulted economists specializing in financial questions on how to rethink the international monetary system. Many individual proposals were shot down by others, but one received almost unanimous support: the return to greater international public regulation of the financial system. Even within the financial world, based on the little I know of it, I have seen unease stemming from the kind of schizophrenia I have mentioned earlier—the tension between day-to-day behavior and innermost convictions. True, the financial world does have its share of unscrupulous and brainless thugs; but even so, many in its midst suffer from having to endlessly recite a mantra in which they no longer believe. Without pushing the analogy too far, consider the implosion of the Communist Bloc, which was hastened by the fact that standardized speech hid the fact that consent was typically *pro forma*. Most people have become used to

distinguishing what they say in public from their personal convictions. Such a disconnection exists in the current system as well. Moreover, two actors, pension funds and sovereign funds, will soon have an interest in a new approach.

To this must be added the difference between various financial markets. Here again, the subprime crisis will probably have lasting effects, for it has desacralized markets like those of London and New York, facilitating the economy's gravitational shift from Europe and North American to Asia. In spring 2008, the Indian economist Ramgopal Agarwala, published a book entitled: *Towards an Asian 'Bretton Woods' for Restructuring of the Regional Financial Architecture*.⁴² The cavalier, scornful way in which American leaders and their backers at the International Monetary Fund handled the Asian crisis of 1997-1998 left deep scars. Paul Blustein's book mentioned by Agarwala⁴³ explains that American leaders believed they could take advantage of the crisis to reaffirm the superiority of their brand of capitalism. Asian leaders concluded that they would have to rely on themselves. Today, they have the ability to do so. The American empire no longer has the means to remain standing. We are heading—and this is a positive development—towards global governance based major world regions and their relations, a postmodern conception of the state in which the European Union has led the way. The implementation of regional architectures will provide the first occasion since Bretton Woods to start the stopwatch over again.⁴⁴

Actors in the informal economy—the social and solidarity economy—are, for their part, in good shape. Until recently they appeared to be dying out in the face of global competition. But

⁴² . Ramgopal Agarwala, "Towards an Asian 'Bretton Woods' for Restructuring of the Regional Financial Architecture", in *Research and information system for developing countries (RIS)*, New Dehli, mars 2008.

⁴³ Paul Blustein, *The Chastening, Inside the Crisis that Rocked the Global Financial System and Humbled the IMF*, Public Affairs, New York, 2001.

⁴⁴ Note from December 2008: Pressed by circumstances, major power leaders cobbled together in November 2008 a G20, in order to remain within the framework of the G7 while including emergent economies. But it was only a shotgun marriage: sooner or later, there will have to be negotiations across the world's major regions.

new social challenges have provided these movements with an historic opportunity to articulate a comprehensive alternative in conjunction with actor-territories. They are accustomed to uniting and to managing economic and social goals simultaneously. They have a cultural advantage. The solidarity economy movement has, for its part, often piloted local initiatives in recycling textiles, waste, household appliances, and computer materials. All of this is, of course, a far cry from a general reform of the economic and monetary system. Still, the will for change has begun to manifest itself. These movements will not settle for reforms at the margin indefinitely.

Among civil society actors, NGOs are at the vanguard. They spearheaded initiatives to cancel the debts of poor countries and in favor of solidarity financing. The two dangers that these organizations face are a tendency to be overly simplistic and a faith in miracle solutions. I call the latter “Yunusmania.” But in any case, there is, at an international level, a network that is capable of unity and which can connect questions about meaning (religion, philosophy, and politics) to a technical understanding of real-world problems. Moreover, this network can turn to financial actors which, though suffering from schizophrenia as said above, can nevertheless provide it with useful information.

Similarly, the globalization of currency and finance will lead international institutions to take on new roles. Personally, for example, I have participated in the UNEP “innovative finance” workgroup’s thinking about responsible investment.⁴⁵ I have been able to witness first-hand the power of convocation that such groups can wield in relation to major actors like banks, insurance companies, corporations, and pension funds. It is perhaps through peripheral institutions of this kind that global thinking will develop.

As for states and political parties, complementary currencies constitute an interesting test. If countries like Germany and Japan are open to the development of such currencies, centralized

⁴⁵ See www.unepfi.org.

countries like France tend to be quite hostile. Alliances with local government networks might get things moving. An interesting case (which I will discuss at length later) is the British Labor Party. To my knowledge, David Miliband, one of New Labor's rising stars, was the first environment minister to put forth the idea of a carbon currency in the form of individual negotiable quotas—an idea that overlaps with my own thoughts about vector-currencies. Though these carbon currencies have yet to be introduced, they suggest an emergent interest in genuine monetary and financial alternatives.

The lesson to be drawn from this still quite varied landscape is that the “TINA” syndrome is behind us. Unexpected coalitions may be born in upcoming years that will seek to conceptualize and implement global alternatives that even ten years ago would have been unthinkable.

Strategies for Change: Some Interpretative Frameworks

What then must be done to implement a genuine strategy for change? The chart in the annex offers a few suggestions. In the chart, I indicate trends that are already headed in the right direction with a plus sign and put an asterisk by those that are obstacles. The filled-in and the empty spaces make the chart particularly interesting.

We are not short on innovators and innovations. They hail from several different horizons: the development of electronic currency, with secure online payments and the diffusion of electronic billfolds; the growing role of “index funds” (an asset product based on a basket of some or all of the publicly-traded stocks and bonds in a particular world region, or in the world itself); the rise of ethical funds; experimentation in complementary currencies; microcredit; and

the solidarity finance movement. None of these innovations is a miracle solution, but they all are worthy of interest. In keeping with the logic of innovation, most of these ideas were developed independently of one another, often at a local level and with no connection to a broader vision of the future.

As for theory, I have already mentioned the problem posed by the splintering of disciplines and the fragmentation of heterodox schools of thought. Moreover, to be credible and to obtain necessary information, theorists need recognition by universities as well as by the finance and business worlds. The latter, however, tend by their very nature to be conformist. At the same time, rethinking the monetary and financial system on new bases requires a radical break. In the field of physics, there is a famous picture taken in Brussels at Solvay Institute in 1911. It shows, in the same room, all the scientists who would revolutionize physics over the course of the twentieth century: one can see Albert Einstein, Marie Curie, Max Planck, Ernest Rutherford, the mathematician Henri Poincaré, Paul Dirac, etc. The only equivalent of the Solvay Congress in the monetary realm was the 1944 Bretton Woods conference, which laid the groundwork for the postwar monetary world. This is why we always hear ritual invocations of a “new Bretton Woods.” Meanwhile, partisans and opponents of globalization exchange insults, but this does little to move things forward. Thinking about finance, currency, and energy usually occurs in separate realms. In the late eighties, our foundation was besieged by “Cosinus scholars,” all seeking our support to develop a new theory of money. It was quite embarrassing. On the one hand, we took seriously, as a symptom, the existence of all these theories, which testified to the inadequacy of current theories. But at the same time, it was difficult for us to form an opinion on the merits of these various initiatives. Each time that we consulted specialists, who, in principle, appeared to be better qualified than we were to judge them, the projects were

returned to us with failing marks. This was inevitable, I am tempted to say, because specialists—people who are presumed to be serious—had little inclination for intellectual frolicking.

As for generalizers, international networks of innovators have been gradually established around issues ranging from complementary currencies to solidarity finance. They play a major role in the rapid, epidemic-like diffusion of new ideas. But these networks work along the margins, not at the heart, of the system. Major actors in finance, such as large commercial and investment banks and major pension funds, hew to the conformist line, hypnotized by their own sophistication. This is why it is so important to grasp the importance of the subprime crisis. In this crisis, unlike in past ones (such as the bursting of the internet bubble or the Mexican and Asian crises of the 1990s), the hard core of the banking and financial apparatus was hit: the United States and most major international banks. This is perhaps an historic opportunity for major financial and monetary actors to consider the need for deep reform.⁴⁶

Another weakness pertains to regulators who operate at a national and thus at an inadequate level, given the lack of global governance worthy of its name. They often find themselves surpassed by the financial sector's technical sophistication.

If one now turns to the levels of change, one observes that all the rubrics of the chart contain one or two “dittos.” At the local level, we find territorialized experiences; at the national level, the emergence of new approaches to currency in Germany and Japan; at the regional level, the creation of the Euro; and, at the global level, the emergence of sovereign wealth funds as important new world actors that are capable of investing for the long-term and the need to renegotiate the Basel II accords following the subprime crisis. Reading the newspapers in the

⁴⁶ Note from December 2008: Though the French president waxed lyrical about the need to recast capitalism, the crisis seems, for now, to have led to the rescue of the existing system. The psychological effect of the failure of Lehman Brothers was such that political leaders became fixated on one idea: avoiding the system's implosion. Many called for a new Bretton Woods; yet the original one, in 1944, came fifteen years after the beginning of the financial crisis of 1929 and was based notably on the idea of John Maynard Keynes.

spring and summer of 2008, one is struck by the difficulties Western political and economic circles have in adopting a clear position towards sovereign wealth funds. Their confusion is justified. The appearance of these funds on the international public scene is, of course, tied to the oil bonanza, but it is also the result of a new strategy. Until now, these funds were as discrete as they could be, recycling with persistence and good cheer their surplus liquidity into the broader financial market, trusting bankers and Western states put it to good use. This is particularly evident in Asia's massive investment in US treasury bonds. The change in sovereign wealth funds' strategy, as modest as it still is, can elicit four different reactions, two negative, and two positive.

The instinctive negative reaction is to prevent foreign sovereign wealth funds from taking control of strategic activities. But this kind of argument tends to stick its foot in its mouth. What exactly are "strategic activities" in an age in which privatization is constantly celebrated, to the point that even combat missions in Iraq are assigned to private actors? And how exactly does control by a foreign sovereign wealth fund differ from control by private transnational actors? The second negative reaction is a result of the sudden awareness that a great shift in power from the West to Asia is underway and occurring far more quickly than previously anticipated.

On the positive side, almost everyone is, in the short run, relieved that sovereign wealth funds rushed to the rescue of major financial institutions that were in desperate need of recapitalization. We might prefer that this not give them the right to vote—but one cannot ask for everything. Over the somewhat longer term, there is growing recognition of the importance of funds that are capable of making long-term commitments. Perhaps this will encourage Western countries to consider the best way to use those other "savings silos" (to borrow Paul Dembinski's term) that are pension funds. The Norwegian sovereign wealth fund, which is a kind of

benchmark for sovereign funds, was, after all, conceived to ensure that Norway would be prosperous after the depletion of North Sea oil deposits, just as pension funds seek to maintain our lifestyle once our productive years have ended. Sovereign wealth funds plan for “later”: once oil is depleted, in the case of funds from oil-producing states, and once demographic transitions are complete, in the case of Chinese and Japanese funds. This means that we have at our disposal, if we group sovereign wealth funds and pension funds together, a means to conduct long-term investment strategies enabling a transition to a sustainable society.

Let us now consider the stages of change. The first stage is awareness. It is quite real and widespread, as we have seen throughout this chapter. Many people sense that all is not right, that the primary purpose of currency and finance has been betrayed, and that technological change is out of control. The real obstacles are the major actors and the ways we think. The vague term of “new monetary consensus”⁴⁷ provided ready-made thought. The financial system’s actors, flush with their own self-importance, were convinced that they ran no risk in mounting the galloping horse of new technology. But now, they find themselves flat on the ground: this should quash their arrogance, if only for a bit.

However—and this is my second point—the widespread awareness that all is not well has not, as of yet, resulted in a shared vision. This is the result of the fragmentary character of innovations, but also of the lack of democratic and collective spaces in which such a common vision could be elaborated. We are all tinkering in our own little corner—an inauspicious plan for renewing our habits of thought and collective strategy. In late 2008, the idea of a “New Deal”

⁴⁷ James K. Galbraith, “La fin du nouveau consensus monétaire. La crise financière et l’héritage de Milton Friedman,” *op. cit.*

(to borrow Franklin D. Roosevelt's famous phrase) began to surface in Barack Obama's campaign. This is symptomatic of the desire to start everything anew.⁴⁸

If we succeeded in articulating a common vision for change, where would we find partners for change? A consideration of the various actors' positions leaves me reasonably optimistic: coalitions that were, until recently, highly unlikely have now become possible.

As for the first steps towards change, they have been suggested throughout these pages. They are not difficult to imagine once a common vision has emerged. I will now attempt to sketch the broad lines of this vision. What are its key aspects? In this chapter, I have been leisurely collecting intuitions, convictions, observations and proposals. Forging a shared vision means arranging them into bouquets.

I propose to do so by reorganizing our understanding of the relationship between money, finance, and energy. Traditionally, one begins with money and its three functions—as a unit of account, as a medium of exchange, and as a store of value—before considering finance or energy. As I see it, this approach has ceased to be valid. Savings, for instance, no longer consist of hoarded money but of financial products. Fossil fuel has become a de facto currency.

We need two bouquets. The first consists of tools for managing exchange. It incorporates two of money's functions: that of a unit of account and that of a medium of exchange. The second consists of tools for managing time. It adopts the perspective of savers, whose primary concern is that their savings do not decline in value. It thus pertains to money's traditional function as a store of value. This bouquet also adopts the perspective of investment and of long-term commitments, which are necessary both for developing the capacities required to produce

⁴⁸ Note from December 2008: The slogan lost momentum in the United States because elites there know that it was not the New Deal that pulled the United States out of the economic mass into which they had been dragged since 1929, but rather the Second World War. The idea of a "Green New Deal" is far more appealing, provided it is not limited to investments, even if they are "green."

wealth and well-being and for making the transition from our current economic model, based on “bicycle” equilibrium—it falls over when it stops moving—to a sustainable society.

The process of producing goods and services, we have seen, employs seven ingredients: four kinds of capital (tangible, intangible, human, and natural) and three kinds of resources (labor, consumed materials, and information). I call my first bouquet, which deals with exchange flows, “vector currency.” It considers capital as a given, which in the short term it is. It is also concerned with the mobilization and transformation of consumed resources in the production process of goods and services that society demands. It pertains both to community bonds and to the respective place of labor, fossil energy, and materials in the satisfaction of social needs.

The second bouquet consists of the means for preserving and developing different kinds of capital. More generally, its goal is to foster society’s capacity to promote well-being over the long run while preserving equilibrium between society and the biosphere. It may sound like I am breaking down an open door. Isn’t this what most individuals, families, and companies already do when they differentiate between current costs and the costs of overhead and long-term investments? Of course. But reconsidering such commonsensical questions leads us to challenging questions and new ideas.

One aspect of the shift that we need deserves to be mentioned upfront; it concerns the status of time. In part one,⁴⁹ I noted that classic economics postulates that time is fungible, that the short term and the long term are interchangeable. The development of financial markets has turned this flattening of time into reality. This is particularly true in bond markets. If I buy a thirty-year bond, I can sell it on the market tomorrow. It is an asset that is just as liquid as a one-month loan or a bundle of currencies. I maintain, however, that time is not fungible, for two very different reasons. First, time is irreversible. Change over time cannot be compressed. If I choose

⁴⁹ See chapter 3, part 3.

today not to undertake a long-term transformation, it will definitely be postponed. If I undertake it too late, then my mistake is irreparable. The most obvious example is climate change. We can limit our future emissions of greenhouse gases, but we cannot stop climate change resulting from past emissions. The other, equally important reason why time is not fungible is the need to take into account an imperative norm of international law, a *jus cogens*, that applies to all actors whosoever they might be: the protection of the balance between humanity and the biosphere and the protection of future generations. In other words, it is my choice whether I put aside money at present for my old age, but I do not have the right to prefer my own personal interest to that of humanity's future.

The hypothesis that time is fungible, which is at the basis of modern finance, is ultimately just another instance of economics' claim that all ends can be justified on its terms. To treat as separate the question of exchange (my first bouquet) and that of investment is a way of reaffirming that time is not fungible.

Let me reiterate one last time that my proposals are not intended as “canned” or “ready-made” thinking. Not all of them are fully developed. This is how I want it to be: for in a “shared vision”, there is the word “vision,” but also the idea that it is “shared.” At the stage when strategies for change are being considered, it is essential that we bring to the table the products of our own imaginations, which at the outset are distinct, informed as they are by our own particular experiences. But gradually, we enrich one another and come together around a project, like musicians in an orchestra, each of whom has a distinct sound, rather than like troops marching at a fixed and rhythmic pace.

5. Vector Currencies

Let me begin with a quick reminder for those who are bad at math. They say that space has three dimensions: left-right, forwards-backwards, up-down. With these dimensions, every point in space can be precisely located: three steps to the right, two steps forwards, one step up, etc. Now if I want, I can add up these steps—i.e., three steps plus two steps plus one equals six; but this would be completely meaningless, just as it would be meaningless to speak of adding up cabbages or carrots. My direction in space is identified not by one number (for instance, “6”) but by a series of numbers (3, 2, 1). This series is known as a “vector.” A vector refers to all possible points in what we call “vector space.” If I am at the center of this space, every point within it can be defined precisely by three numbers, known as coordinates. By saying “(36,000; -400; -12),” I clearly identify a single point in my space. A map is a two-dimensional space. On a city map, for instance, I can identify the North-South and East-West coordinates of my destination, and then find the way to get there. This kind of vectorial representation is useful in daily life not only when I have somewhere to go, but also whenever I need to combine things that are not commensurable—in other words, things that cannot be reduced to a single dimension. And there are a lot of dimensions.

Take, for instance, a plate of spaghetti bolognaise: its dimensions are countless. There is the physical composition of the plate; the pasta, meat, and tomatoes; particular quantities of salt, water (to boil the pasta), and cooking time; the chemical composition (lipids, proteins, etc.); and even opinions concerning its taste, ranked on a scale from “delicious” to “terrible.” All of these dimensions can be found in the production and consumption of spaghetti bolognaise. We integrate them into our daily actions, without worrying too much about it or finding it

unreasonably complicated. Recipe books reduce these many dimensions to a handful: easy-difficult, quick-long, cheap-pricey, or filling-light.

The point of these details is to demonstrate that what I call “vectorial currency” is not some new, incredibly complicated idea, but, on the contrary, a return to the oeconomy of the real—a shift away from arid monetary considerations to concrete questions like getting around a city or making a plate of spaghetti.

Let us consider how a family consumes a series of goods and services. Once I have carefully traced the entire process through which these goods and services are produced, using counting units that do not immediately distort reality by reducing everything to a monetary equivalent, it becomes apparent that goods and services have multiple dimensions: an amount of energy used, a quantity of heat and gas that was reused, another quantity that was released into the atmosphere, and so on. What quantity and what quality of labor was employed, and how much value was added over the entire global supply chain? What is the relative share of local as opposed to imported labor? Is the product new, used, or reconditioned? Was there a way to provide the same service with less material? What kinds of capital were employed? And so on. All of this data, all of these incommensurable dimensions can be grasped only if one has a suitable counting unit and a solid understanding both of the global supply chain and of the relevant territory’s metabolism. Any exchange implies double-entry accounting—i.e., one party’s asset is another’s liability—in relation to a large number of different actors, just as my liabilities in my family budget are the assets of many providers.

If I consider a list of the ingredients of the good, or service, that I happen to consume, I notice that they belong to different categories of goods and services (as defined above): immaterial capital is a first-category good; water and energy, a second-category good; and labor,

a third-category good. My package of spaghetti is for the most part made up of third-category goods: it is divided when shared and can be produced in limitless quantities thanks to human ingeniousness, which determines agricultural productivity, the quality of machines, and the efficiency of human labor and of the distribution system. However, this package of spaghetti will also have incorporated, through its production process, different categories of goods and services, each corresponding to a specific governance regime. (Still following? If not, take several steps backwards and start over again).

A final remark: incorporated labor may come from different communities, whose cohesion I contribute to preserving through continuous systems of exchange. These include the “world community,” prefigured by the globalization of trade; the “European community” (my spaghetti is “Made in Italy”); and the community of customeres, maintained by membership cards functioning as a kind of quasi-currency. I might also include the community of people who enjoy spaghetti bolognaise, with whom I might organize group purchases of spaghetti. Finally and most importantly, there are “territorial communities,” which are established and preserved by local exchanges of labor, information, skills, experience, energy, etc. Just as on Facebook I can belong both to a community of Harry Potter fans and to one for *pétanque* players, each community can, as I have explained, manage these exchanges through its own special currency. This currency is nothing more than the recording in a single registry of all the transactions occurring in its midst, as the SWIFT system has done for bank transactions since 1973. This is the basis of all complementary currencies that have developed on all continents, many of which already use cards with memory chips.⁵⁰ Special communities also have concrete economic implications. For example, Bernard Lietaer describes the fascinating Japanese experiment

⁵⁰ An interesting review of these currencies can be found in *Currency Systems for Global Sustainable Development*, August 2007, <http://money.socioeco.org.fr>. The reader will find on this site many in-depth analyses of complementary currencies.

known as “*Fureai Kippu*”⁵¹—literally, a “cordial relationship ticket”—that was launched in 1995 by the Sawayaka Welfare Foundation. According to this system, the time I devote to a senior citizen is recorded in a savings account that allows me to “acquire” the same care from neighbors of my elderly mother, who lives on the other side of Japan, if they belong to the same community of care exchange. How wonderful is that?

But how can the variety of dimensions that exchange implies be transformed into a method of payment? The latter must be a compromise between the need to “take everything into account” and the fact that I may need to buy a packet of spaghetti because it is almost dinner time and my bolognaise sauce needs two hours to simmer. For this, two things are required: a simple method of payment and a restricted number of dimensions. Consider the idea of an electronic billfold. A memory-chip card record many other dimensions besides just euros. The accounting notions of liabilities and assets can also be used to track many different dimensions. This, for instance, is what my membership card does when it subtracts my expense while crediting me with loyalty points. As for restricting the number of dimensions, it leads us to focus on four in particular: labor in one’s local community, which for simplicity’s sake I will call “local labor”; external labor; energy; and other material resources.

So I find myself with an electronic billfold and in a four-dimensional vectorial space—I find myself, in short, with vectorial currency. Each of these dimensions corresponds, if you will, to a particular type of currency with its own logic. Each must respond to the three inherent anxieties associated with monetary exchange: the risk of counterfeits (i.e., that I be paid in monkey money); the risk of rapid declines in value; and the risk that vendors will refuse to accept it. For example, if my card has credits in complementary currency, denominated in hours of labor, or in a complementary currency issued on at the local level, vendors must still accept

⁵¹ Bernard Lietaer, *Mutations mondiales, crises et innovations monétaires*.

that all or part of the labor incorporated into the goods they sell me be paid in this currency. As soon as a “local actor” is created, with a territorial economic agency managing the system of local exchange, a compensation fund can be created to establish fixed equivalencies over a given period—for example, one year—between a complementary currency and (say) euros, allowing local providers to reconvert my payment in local labor into euros, or me to refill my billfold in local labor credits through a payment in euros.⁵² The function of the first dimension is thus to intensify exchanges, particularly on the territorial scale, to promoting a community’s potential and talents, and to reinforce economy’s legitimacy by applying the principle of the least constraint.

As became clear in our example of spaghetti bolognaise, we must remind ourselves of how ordinary it is to use several different currencies. In 1998, Jérôme Blanc of the Walras Center found “for the period between 1988 and 1996, 465 recorded examples of the use of several parallel currencies in 136 world states ... It is reasonable to think,” he wrote, “that today, in all countries, parallel instruments exist alongside national currencies.”⁵³

When one speaks of a parallel currency, one often thinks of small-scale and activist-initiated experiences like LETS (local exchange trading systems); however, the use of currencies other than national ones is much more common, notably during periods of hyperinflation. This occurred, for instance, at one stage of the “dollarization” of Latin America. “Restaurant checks” or transport company’s “miles” functions as counting units and payment methods, which are monetary functions, even if they only allow for the purchase of a particular type of goods and services. In addition to *Fureai Kippu* (see above), which involves thousands of members, the Swiss WIR Bank has also been a very instructive experience. Created in 1934, it is the ancestor

⁵² This “equivalence” with official currency is found in most experiences of complementary money.

⁵³ Jérôme Blanc, “Les monnaies parallèles : évaluation du phénomène et enjeux théoriques.” Centre Auguste et Léon Walras, April 21, 1998.

of contemporary complementary currencies. It is an internal exchange currency used by Swiss companies, first created to deal with the currency shortages following the 1929 crash. Today the WIR Bank has 60,000 members and generates annual exchanges of nearly 2 billion Swiss francs.⁵⁴ Where the WIR Bank and *Fureai Kippu* are similar is that, unlike the “melting currency” of Gesell, the primary aims of which is to speed up exchange flows, they manage exchange over time: with *Fureai Kippu*,⁵⁵ one can keep one’s “credit” until the day one requires one’s own care; and the WIR Bank allows members to make each other loans.

To mention local currency as the first dimension of vectorial currency is thus not, in itself, revolutionary. What is revolutionary, if it even makes sense to use this term, is to turn complementary currencies into an instrument of common law and to give them more importance—to make of it a currency as important and familiar in the long run as the euro or the dollar. We have entered an age in which the service sector constitutes the largest portion of the economy. Many of these services are delivered locally. The trend towards the “dematerialization” of the economy (which we have already discussed) reinforces this tendency, as it aims to substitute, whenever possible, services for goods. The diffusion of information technology and the Internet, which has contributed to fusing currency and finance, can also contribute to organizing local exchanges. As for the aging of the population, which has, along with the rise of individualism, created “savings silos” (i.e., pension funds), it can just as easily lead in the opposite direction, becoming, as in Japan, a powerful force in the development of territorialized systems of assistance to the elderly. The financial crisis of retirement systems will undoubtedly lead to a search for alternatives. Many elderly people are becoming aware that the counterpart to the independence they achieved through comfortable retirement benefits is the

⁵⁴ See the article “WIR Bank” on Wikipedia.

⁵⁵ See the “Fureai Kippu” article on Wikipedia.

isolation they face once they are no longer mobile. Finally, the continued aging of the population, and particularly the rising number of the “oldest of the old,” will lead territorially-based “young” retirees to care for their “own” seniors, making it urgent that one abandon the tendency to rely exclusively on the employed population for financing care for the elderly.

As we see, the same technical and demographic factors producing abstract “financialization” and (monetary) transactions can thus also foster territorialization and (social) relationships.

Only the veil of ignorance that currently cloaks territorial metabolisms still hides from us the importance of these stakes. The first dimension of vectorial currency will contribute precisely to tearing down this veil over time. The attitude of local authorities themselves will prove decisive. Indeed, a very important share of local public expenditures is devoted to public services. One can thus imagine a virtuous circle in which authorities would accept that a share of local taxes would be paid in a local currency, and an equivalent share of public services would also be paid for in a local currency. The effect of generalizing this practice would be immediate. Remember that, not too long ago, debit cards were not particularly widespread—until, that is, the day when gas stations began to accept them. The contagion was immediate.

I now turn to the second dimension of vectorial currency: the payment of labor performed outside a territory. This second dimension must necessarily be managed through an internationally recognized currency. The central question here is the predictability of this currency’s value. Economic activity that takes into account the long term depends on the overall predictability of the evolution of various currencies. Is it possible today to return to the spirit of Bretton Woods, either by reconsidering Keynes’ idea of a new world currency, or by returning to fixed exchange rates between major currencies? This was debated in June 2008 at a seminar

organized by the IRE and EPS (see above). It was not possible to arrive at a consensus concerning the means, political feasibility, or advisability of bringing greater stability back to the exchange system. In my view, the necessity of doing so is nonetheless clear. First, uncertainty profits financiers at the expense of companies producing goods and services that are useful to society. The latter gain nothing when their profits depend primarily on their ability to manage uncertainties tied to financial investments, rather than on their ability to produce useful goods. In my professional life, I have observed that when the future of a company depends on financial juggling or the art of corruption, the entire company rots at its core. All the codes of conduct in the world can do nothing to change this. In this situation, “hidden qualifications” reward cleverness and underhandedness at the expense of competence. Additionally, instability benefits the best informed and the most mobile. This place poor countries and small actors at a disadvantage.

What are the solutions? In the seminar mentioned above, there was one point on which all agreed: the impossibility of returning to the previous status quo, in which the dollar was the de facto international currency and in which the expansion of the monetary mass denominated in dollars made Americans “consumers of the last resort” and the guarantors of global growth. The relative size of the United States in the world economy—barely a quarter of the global GDP—is now too small for it to still be able to set the tone. The relative decline of American power has until now been compensated by the credibility of its financial profile. This moral credit will probably be damaged for some time by the subprime crisis. Finally, private and public debt in the United States and surpluses held in dollars by Asian countries are now too great for their growth to continue without being a constant systemic threat. Even so, the United States remains a leader, and there is little chance for a global initiative seeking to renegotiate the global financial system

to succeed unless it takes the lead. This will be one of the historic challenges faced by the American administration that succeeds Bush, and a possible aspect of the “New New Deal” to which I earlier alluded. In any case, the status quo is unacceptable; it must change. But in what direction? Three paths—which are more complementary than mutually exclusive—must be explored.

The first is to return to a better way of regulating capital flows—currency and finance now being inseparable, as we have seen. Deregulation is no longer fashionable. In the Asian crisis at the end of the nineties, the countries that maintained control over their capital flows—China and India—survived the best. The need for greater public regulation is also a main lesson of the subprime crisis.

The second path is to head towards a federated global monetary system, founded on cooperation between major world regions. Each world region would have a standard currency that would be tied to others through a regional monetary “snake,” like that of the old European Monetary System, which preceded the euro; between regional currencies, there would be fixed exchange rates, which would be regularly reassessed through a Bretton Woods-like system. This would be a way, if not to return to the fixed rates of Bretton Woods, to at least limit fluctuations between currencies.

But who today is in a position to convene a new Bretton Woods? It could be the G20, which is getting more and more attention. Beginning with the G8 session of the summer of 2008, it became evident that this self-appointed directorate, which at the outset was only a “G7,” was useless unless China and India were present. Another option is that the International Monetary Fund (IMF) could summon a conference of the world’s major regions, i.e. the United States, the

European Union, China, and India. The IMF was born at Bretton Woods and must, in any event, redefine its purpose.

It could launch a joint initiative with the World Trade Organization (WTO), since the fact that both trade and currency now operate on a global scale makes them inseparable. It is also possible to consider a multiparty initiative including OPEC as well as major pension and sovereign funds.⁵⁶

A third, more difficult task, also merits consideration. It involves creating from scratch a “physical” world currency (or global reference currency), consisting of a bundle of commodities (oil, wheat, copper, etc.), which would, in a sense, be a substitute for the old gold standard. Bernard Lietaer, the strongest supporter of this idea, calls this reference currency “Terra.” I refer the reader to his books, particularly *The Future of Money*, for the full argument.⁵⁷ I don’t agree with everything Lietaer says. However, since he wrote the book, I now see three new arguments that justify his thesis. The first is that oil is now fully integrated into the financial and monetary system. I do not mean to say that “Terra” actually already exists, but simply that there is no longer anything preventing all international commercial exchanges from being denominated in Tons of Oil Equivalent (TOE).

The second argument is more important: if we want to make speculation on raw materials such as oil, wheat, copper, etc., less attractive, and prevent fluctuations in production volumes (be they the result of political circumstances, as with oil, or climactic ones, in the case of wheat) from triggering sudden price variations due to the stagnation of demand, we must regulate world markets through “buffer stocks”. These stocks are destined to become a global public good. In

⁵⁶ Note from December 2008: The G20 hypothesis initially prevailed, but there is a risk (mentioned above) that it will consider itself not merely to have a summoning power, but as the authority that would actually create a new financial system. In my view, it cannot be the latter.

⁵⁷ Bernard Lietaer, *The Future of Money*, Century, 2001.

the summer of 2008, the opening of the American Strategic Petroleum Reserve (SPR) helped bring down the price of oil after it rose dramatically in the spring. According to Paul Davidson, this already occurred in 1991 (with the oil shock caused by the first Iraq war) and in 2005 (after Hurricane Katrina⁵⁸). One cannot at the same time complain about American leadership and ask the US government to bear the burden of maintaining stocks on their own, as in the case of agricultural products after the Second World War,. The “food crisis” of 2008 showed that the world reserve stocks had, over the years, melted like snow in the sun. More than half of world’s reserve stocks are maintained in China, and is used by the Chinese government for its own domestic needs.

We are faced perhaps with a historic opportunity. States, pension funds, sovereign wealth funds, and companies could join together to finance and manage stabilizing stocks. This would lead companies to use these reserves as their reference currency for trade, and pension funds to use them as asset reserve.

Finally—this is the third argument—very large corporations play a decisive role in organizing most of world trade, and they are few enough to agree amongst themselves on a new reserve currency. This brings us back to why industry chains are so important. ISO standards are already an interface between the public and private sectors. They already provide incentives for cooperation and consensus building between companies, with the state’s blessing. And isn’t currency, after all, just an accounting standard like any other—the expression, as Lietaer puts it, of an agreement? A bundle of raw materials founded on international stocks would be, at the end of the day, a more credible exchange standard than the dollar, whose value is a function of American political imperatives.

⁵⁸ Paul Davidson, “Crude Oil Prices ‘Market Fundamentals’ or Speculation.”

In sum, the first dimension of vectorial money is tied to territories and the second dimension to international production chains. Clearly, these two have a hard time leaving one another.

One could object that the price of oil is much too volatile to serve as a reserve currency. After all, it went from \$10 a barrel in 1999 to \$145 a barrel in July 2008.⁵⁹ But this volatility is a direct result of weak regulatory stocks. Oil production is fairly easy to regulate and predict. Demand for it evolves slowly. Even oil-producing countries have an interest in its stability.⁶⁰

This brings me to the third dimension of vectorial currency: fossil energy. We all know we need to limit oil consumption, for two reasons: to contain within acceptable limits the irreversible process of global warming; and to prevent competition for the control of energy resources from degenerating into global conflicts. (Every contemporary conflict or potential conflict smells of oil and gas...)

Fossil energies are second-category goods. Their governance must satisfy imperatives of justice and efficiency. Individuals, nations and world regions have each a minimum right to existing fossil energy resources (this does not, however, mean the right to free energy). Since each individual's "share of global fossil energy reserves must decrease over the years, a quota of fossil energy for each individual and each economic activity will be required. Quotas will apply not only to energy purchased to fill one's car or to cook and clean at home—they must also include energy incorporated into the good and services one purchases, which belong to one's ecological backpack. For each new purchase, the quota allocated at the beginning of the year

⁵⁹ Daniel Cohen, "Pétrole, l'heure du doute," *Le Monde*, August 28, 2008.

⁶⁰ Note from December 2008: The fall of the price of oil to \$40 in late 2008 only confirmed this volatility. Fall in demand was eventually tempered, but it was enough to drive the price of oil by four.

would be charged to one's electronic billfold, just as one is charged in miles each time one applies some of them to buying a flight.

However, as the British politician David Miliband has suggested, anyone can sell part of or her quota to the highest bidder, instead of using it for her own needs. A system of territorial auctioning, comparable to the stock exchange, would set for a given period the price of a Ton of Oil Equivalent transferred. Any transfer is immediately registered as a debit and credit on the respective cards of the vendor and the buyer. This mechanism is hardly revolutionary: in Europe, it is used in emission rights markets. Individual or companies can also increase their quota by producing and selling renewable energy. Finally, they can negotiate the price of energy transferred to a third party, for instance in the form of heat. Since the emission of heat is localized, its transfer is only negotiated one step at a time, which contributes to its being used more efficiently. On the basis of quotas allocated to everyone, fossil energy is sold to individuals and companies at a price fixed for a given period—for example six months—and revised in accordance with the changes of stabilized global prices, as in the case of gas.

It should become clear at this stage how the various dimensions of vectorial money are related to one another: if fossil energy is included in a global reserve currency, according to the hypothesis previously advanced, its price will automatically be stabilized, and the question of its price in the context of individual quotes will become irrelevant. Consequently, since fossil energy prices are not excessive, the poorest families will be able to survive and to put themselves in a position to sell their surplus. This requires technical support strategies and the creation of financial products of long-term investment, notably products allowing for the improvement of the housing stock's thermal efficiency. Remuneration for these financial products will follow the classic method of dividing up the savings thus achieved.

This territorial system of auctioning is only the first stage. Compensation mechanisms must be established between territories: territories that have not used all their quotas should be able to transfer them, using the same mechanisms, to territories that require them. Since direct and indirect energy expenses are, through the ecological backpack of consumed goods and services, for the most part tied to income, the third dimension of vectorial currency has two advantages: it is a powerful incentive to rapidly increase the efficiency of energy use, to take advantage of exergy, and to produce renewable energy; and it is also redistributes.

Let me finally mention, in conclusion, the fourth dimension of vector currency: that of consumed material resources (other than fossil energy). These material resources belong to different categories of goods but are similar to third-category goods in that they are recyclable. Since modern production processes can be traced in detail, goods and services that are sold must provide precise information on the material processes consumed throughout the entire process. Indeed, the transferring onto a CRT (consumed resources tax) as large a share as possible of the financial burden that is currently placed on labor through the VAT (value added tax) is, as I have shown above, crucial. Naturally, the CRT will be returned to recyclers. Except for this fiscal portion, the “material value” of the purchased good is embedded in the market price. When the materials in question can be either purchased from abroad or extracted at home, it is reasonable to expect that the external part would be paid for in an international currency, and the internal part in a local currency.

6. The Management of Time: Stores of Value and the Operation of Financial Markets

The management of time and the functioning of financial markets raise six questions. They are as easy to ask but difficult to answer.

1. How does one mobilize in the present the resources needed to satisfy tomorrow's needs?

2. How does one guarantee that saver and the loan-maker that they will recover their loan (with interest)? This is the classic question raised by stores of value.

3. How does one distribute (from the local to the global levels) savings so that they can contribute to useful social change? And how does one measure "usefulness"?

4. Presuming one wants to develop the tangible, intangible, human, and natural capital upon which our prosperity depends, what measures can be used to assess this development? And what kinds of return can be offered on these investments to investors, given that most of this capital yields no interest?

5. How can one turn more or less short-term savings into very long-term investments?

6. How does one orchestrate institutional arrangements based on a natural or organic rationality that promote one's goals?

So, first: How does one mobilize today's resources for tomorrow's needs? If one expects the needs in question to be greater and to extend to society as a whole, avoiding each individual's regard for his or her particular needs, then one must obviously connect them to the personal interests of investors. This is the remunerative purpose of capital investment. But it is often overlooked that these more extensive needs must be tangible and properly explained. Thus we encounter once again the idea that abstract, anonymous transactions must give way to relationships, to an almost physical sense of the stakes involved. If one does not want the

connection between risk and return on capital to be the only principle guiding how savings are used, then they must be tied to objective goals that are based on something other than the celebration of egoism (despite the fact that this is what most advertisements promoting financial investment do). Savings management must also be tied to the desire for meaning, to which I have often referred in this book, and the feeling of communal belonging. I predict, for instance, that the development of “lasting supply chain contracts” as well as Territorial Oeconomic Agencies could spur the creation of specific financial tools.

Second question: what kind of guarantees can be made to savers? This question must be answered in two stages. First, it must be shown that the guarantees that exist in the current system are far more precarious than are generally acknowledged. What are the existing guarantees? The answer can be summed up in a sentence: the risks that borrowers would incur in not reimbursing or honoring their commitments. This problem is familiar to all traditional forms of mutual aid, from the tontines of African villages to present-day mutual loan systems in the Chinese diaspora, by way of the entire history of the cooperative movement. Laws may not be broken, but one risks losing face and being ostracized from the community. After all, in traditional banking, one speaks of loans given “on trust,” which imply that one depends on a single guarantee: the fact that whoever does not pay back his loan would lose their honor. Whether it be the judicial system, which is appealed to if the terms of a contract are not respected, or more informal mechanisms, a guarantee, like money itself, always implies a community or a plurality of communities.

Theorists of these issues have made an interesting distinction between “hot money,” which comes from one’s own community, and “cold money,” which comes from some anonymous elsewhere. Hot money is always better managed and likely to be reimbursed. Cold

money is a different matter. Grameen Bank-style microcredit is based on a similar logic: asking a group of women to mutually guarantee loans made to each of them is a way of replacing financial guarantees, with a promise that each woman makes to the others—in other words, with social pressure.

The kind of reasoning that works for a community is just as valid for the world as a whole. Guarantees depend, at the end of the day, on relationships of mutual trust. The financial and banking system once—and not that long ago—had to offer peasants and small savers a lot of guarantees before they were prepared to give up the gold coins hidden undress mattresses or behind chimneys in exchange for bank accounts and paper money. In many instances, they had every reason to be suspicious. In postwar France, public housing was financed thanks to the differential between the interest rates of the Caisse d'Épargne (a savings banks) and inflation, in a way that massively penalized small-time savers. The same mechanism of mutual trust guarantees, at an international level, relations between banks. This is why when a financial crisis occurs, like the subprime crisis of 2007-2008, states seek at all costs to prevent banks from collapsing like dominos. In each crisis, the same question recurs: shouldn't we let irresponsible investors and banks fail in order to teach them a lesson? Is it fair that after privatizing profits, we socialize losses by recapitalizing (or even nationalizing) failing financial institutions? If, in general, states decide to assist weakened actors, it is because the worse thing that can happen to them is a general loss of confidence in the system.⁶¹ But mutual trust and communal

⁶¹ Note from December 2008: The unfolding of the financial crisis in late 2008 only confirms this analysis. But though major states, as was to be predicted, guaranteed the commitments of banks, this was not enough to restore trust between banks: after all, they know one another too well. The crisis's development offers two other illustrations of this idea. First, the American government had to run to the rescue of Fanny Mae and Freddy Mac because of massive Chinese investments. Their collapse would have in effect destroyed, from the Chinese perspective, American credit. Second, Crédit Suisse offered Swiss savers "structured products" from Lehman Brothers, the value of which disintegrated after Lehman's collapse. Initially, Crédit Suisse's response was legalistic: as the middleman between Lehman Brothers and savers, it had no obligation to indemnify the latter. The savers,

consciousness make debts legitimate. As I have said previously, the fragility of the foreign debts of developing countries is tied to the fact that they have little legitimacy. Developing countries feel constrained to repay these debts so long as they find it unacceptable to lose the trust of international investors because they expect they will need additional loans. Could they free themselves from this constraint, then everything would be different. I have also spoken of the risks undertaken by foreign investors: when the broader question of debts and loans between countries is addressed, the problem of the ecological debt of long-developed countries—i.e. of non-repaid damages incurred by past appropriations of wealth—will inevitably be raised.

Financialization would seem to suggest that trust-based guarantees could be replaced by their opposite: the option of withdrawing at any moment. This is what we call investment liquidity. It has two purposes. First, it makes it possible to mobilize one's savings at any moment. This is a legitimate way to prepare for life's uncertainties, such as illnesses or accidents, or to seize opportunities, such as buying a home. But the second and more important purpose is to provide the loan-maker with an apparent guarantee: you can always pull out before it's too late. But this is pure recklessness. Everyone says: when you smell something burning, don't try to put out the fire, be the first to get out. I've known a lot of wealth managers. Most say that if they keep their eyes glued to their screens, they can cash in on market highs and still bail out when things start to fall. But this outlook is delusional when everyone else is thinking the same way. It's the same old story of Rothschild and Waterloo. From London, Rothschild had organized an elaborate system of couriers and relays to be the first one informed of the outcome of the Battle of Waterloo. All he had to do was spread the rumor that the English were beaten to walk away with the pot. We should acknowledge that the system of guarantees is particularly

however, had placed their trust in Crédit Suisse; consequently, it had to retract this position and commit itself to indemnification.

fragile for small savers. If this were not so, such sophisticated systems for commercializing risks would not have been put into place.⁶²

If we want to return to stable relationships, current guarantees—the ability to be the first to flee relationships at any given moment—is no longer practicable. Instead, we must turn once again to legitimacy and community. My feeling is that the use of loans is clear and self-evident when they are tied prosperity in general and deemed legitimate. From this perspective, the growth of index funds and more generally of Undertakings for Collective Investment in Transferable Securities Directives is probably inescapable. They have the advantage of distending the relationship between saver and investor. Consequently, they resemble transactions more than relationships, on one hand, but, on the other, they respond to a need to mutualize risks which is all the greater in that access to information, and thus to the extent of the risk, is a problem for the average saver. Still, it is possible to find compromises that are more advantageous than the current ones. To return to our future pivotal actors, collective investment in the development of a territory's prosperity or in the transformation of a supply chain to make it more sustainable allows one to maintain relationships within the community while mutualizing risks.

Third question: how can one, at both the local and the global level, direct savings towards useful social change? And how can measure their practical impact on society? Directing savings is not the hard part. The two priorities that are the fight against poverty and the transition to a more sustainable society would alone (particularly) the second mobilize all available savings. The question of measuring the societal impact of this investment is more difficult. We confronted this problem in relation to microcredit and evaluating the state of the world. And it is

⁶² Note from December 2008: Once again, the events of late 2008 illustrate this analysis perfectly. Investment illiquidity only accelerates collapse.

even harder to trace a connection between a particular investment and a broader trend. We need to invent a mechanism for mutualizing risks and profits.

The fourth question—how to direct savings towards capital growth the value of which cannot be assessed in commercial terms?—is even more difficult. When introducing the four different kinds of capital, I showed that they were fundamentally mixed, i.e., both public and private. Furthermore, we have seen on numerous occasions that intangible and human capital, as well as fourth-category goods (which multiply when divided), were instrumental to our future prosperity. It is one thing to devise measuring tools, but it is altogether different to remunerate savings that contributed to the growth of such capital. Let me mention once again the examples of intangible and human capital by limiting myself to the simplest of cases, i.e., territories. Let's assume that I am able to create measuring instruments. For instance, I might attempt to measure the intensity of cooperation between public and private actors in a particular territory, the average size of social capital, or the level of training that individuals have attained and its appropriateness for a particular society's needs. Even so, all actors do not use these two forms of capital exclusively, as the economists say: that is, using one does not exclude using the other. This complicates considerably the question of the remuneration of investments made to develop these two kinds of capital, but it does not render it impossible. Three solutions present themselves at first glance—and there may well be more. The first, classic solution involves taxation: local governments agree (as they alone are in a position to do so) to collect taxes in order to pay back those who made investments. In many countries, moreover, local governments regularly pass bond levies in which private entities participate. Another classic approach consists of creating a kind of club, an economic interest group in which investments are made in intangible and human capital for the exclusive benefit of its members. This solution can be useful

in certain situations, but it partially contradicts the very nature of intangible, human, and even natural capital. There is a third approach that I find particularly appealing, but which would demand great strides in innovation and learning: it consists of considering the impact that the development of these forms of capital have on the ability of various economic actors to produce useful wealth in our society. For instance, one could try to evaluate the overall change in a local economy's efficiency, the change in its "material productivity"—that is, the relationship between added value produced and energy and matter consumed. We have seen the real productivity of an economic actor is a function both of its own qualities, i.e., of its ability to manage and to innovate, and of its environment. This mixed identity should lead to financial products seeking both the improvement of a supply chain's environment as well as the development of the supply-chain actors themselves, with rules for the distribution and the remuneration of investments. These rules must be independent of any information about whether a particular investment helped to develop intangible capital while another contributed to the growth of one of the supply chain's companies. This approach would, in other words, be consistent with the idea of "index funds," but whereas these currently only apply to funds invested in companies, the concept could be expanded to the entirety of actions that contribute to society's overall prosperity. This approach would be a compromise between a public loan paid back through fiscal revenue, and private investments that are remunerated through profits.

Looking beyond the territorial levels (including that of the world itself), the question of whether one can similarly conceive of mixed financing for first-category goods, which are diffuse and span a very large scale, is posed. Consider, for instance, the preservation of Amazonia or the Siberian steppes. When protecting a local environment, one often uses civil law easements to restrict its use. I described these mechanisms when discussing first-category goods.

It remains to be seen whether we should explore the hypothesis that protection is so important to humanity that one could, in the absence of a global system of taxation, conceive of collective means of investment with sufficient guarantee of return.

The fifth question concerns the transformation of short-term savings into very long-term investment. In itself the question is not new. It is the question that defines the banking profession. Even so, our age's greatest challenge is to reconnect with a sense of duration and to find capital to invest over a very long time. I have said on several occasions that the stakes require us to form a coalition between pension funds and sovereign wealth funds. We do not only need a second Bretton Woods or a Global Compact, but the creation of a lasting contract between the major investment funds, territories, and supply chains. A simple example: the creation of financial products that could change the existing urban housing stock. This would require investments, to be amortized over a twenty or thirty year period, that current proprietors of public housing units cannot afford to finance themselves, precisely because they cannot provide banks with sufficient guarantees. In these situations, one could imagine forms of investment remuneration that would define rules for dividing up between the public housing proprietors and local investments funds the savings achieved, for instance, on heating bills. If I insist on the idea of a shared vision, it is because I am convinced that, as soon as the stakes are clearly understood, solutions that I alone am incapable of imagining will gradually emerge.

Finally, the sixth question: how should one go about conceiving of new institutional arrangements for finance? Let me offer a few suggestions.

The first concerns the remuneration of financial operators. I am convinced that in the current system, financial operators face a permanent conflict of interest in relation to their clients. It is worth remembering that in any service-sector activity, the question of whether value

is being added or being subtracted is undecidable: value can only be measured by what the client agrees to pay the service provider. One very simple measure that can be adopted is to cease remunerating capital transactions. It is better to have a financial middleman whose management costs are high but who has a real talent for analyzing risks and opportunities than one with low management costs but who is filling his pocket by constantly charging for individual transactions. This system encourages criminal behavior.

A second, similar suggestion is to defer remuneration. This approach is often used for CEOs. Along these lines, I have also mentioned the importance of only evaluating the performance of funds and middlemen over a relatively long period of time—three or five years—while finding measures that promote the more stable contracts between savers and managers.

A third suggestion is to reduce the role of and the means available to financial predators. For instance, the right to use one's stockholding to vote at a shareholders meeting should be tied to the length of time—perhaps three years—one has owned stock. No one thinks it unusual to restrict voting rights in a particular country to citizens who have lived there for some time and have been properly naturalized. Given the importance of economic actors, why should it not be the same in companies? This would strengthen the influence of stable shareholders who associate their own prosperity with that of a collective undertaking.

My final suggestion involves reforming pension funds. In some countries, they are almost required by law, given the fact that they manage employees' savings, to restrict themselves exclusively to tending to their interests. This precludes long-term investments in change that could ensure the future of these employees' children and grandchildren or in traditional domains that preserve the security of these investments. We thus have here a major opportunity for innovation—yet which does not require rocking the boat too much.