Fertile Obfuscations:
Making Money Whilst Eroding Living Capital

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ABSTRACT

There are two fundamental flaws of misplaced concreteness in economics. First, is the obfuscation of the Greek root word "oikonomia", which refers to study of the well-being and stewardship of the household, habitat or natural environment. Instead economics has become more aligned with "chrematistics" (a word almost forgotten in modern dictionaries) which refers to the study of wealth or a particular theory of wealth as measured by money. The second greatest error in economics is the confusion of wealth, which is a magnitude with an irreducible physical dimension, with debt (money), a purely mathematical or imaginary quantity (Daly, 1996). The shortcomings of measures of oikonomia, such as the GDP and national income accounts, have long ago been acknowledged by one of its architects Simon Küznets (1954, 1965), and more recently Waring (1988) and Daly and Cobb (1994). The emergence of new measures of economic, societal and ecological well-being is evidence that some of these shortcomings are finally being addressed. For example the UN Human Development Index (HDI), the Index for Sustainable Economic Welfare (ISEW; Cobb), the Genuine Progress Indicator (GPI; Cobb, Anielski), the Index for Economic Well-being (IEW; Osberg and Sharpe), and the Index for Social Health (ISH; Miringoff).

Yet even these important reforms in national accounting towards a more honest assessment of the oikonomia of the nations will be meaningless without understanding the fundamental root of the economic growth paradox, that is the nature of money and how its creation (and destruction) affects the well-being of nations. Money is the lifeblood of all economies yet few understand how it is created and how this process leads to destruction of living capital (human, social, and natural) and the real wealth of nations. Only fundamental reform of monetary policy and the process of money creation will the chrematistic world of virtual wealth (stock markets, currency markets) become aligned with oikonomia – stewardship of the physical world and human experience of quality of life. Resurrecting the voice of atomic chemist and economist Frederick Soddy (1926, 1934, 1943) the paper examines the evidence of that while there has been a massive *ad finitum* build up of virtual wealth (debt, stock markets and even GDP) over the past 50 years, the physical, living capital (as measured by the 1998 GPI and other indicators of living capital) has been declining. The evidence affirms Soddy's astute economic observations that an economy built of debt-money, disconnected from the natural laws (laws of thermodynamics) would eventually lead to a reductio ad absurdum where a perpetual delusion of prosperity is maintained through the obfuscation of the realities of living on debt, whilst real wealth is being consumed. The paper raises a fundamental challenge to both economics and business disciplines to explore not only the reform of national accounting systems to provide a more meaningful barometer of the oikonomia but also the reform of traditional financial and management accounting systems to measure social, environmental and financial performance. Most importantly, the paper calls for a fundamental reform of monetary policy, the elimination of fractional reserve banking, and the alignment of money creation to oikonomia objectives of improving or sustaining the real wealth of nations. Can the nature of money and monetary policy be restructured so that it serves the desired outcome of citizens for the sustainable welfare of natural, human or social capital – in short, improved societal well-being? I believe so.

KEYWORDS: Genuine Progress Indicator; Gross Domestic Production; Living Capital; Social, Human, and Natural Capital, Economic Welfare; Money; Monetary Reform.

1. Introduction

The purpose of this paper is: 1) to explore new avenues for measuring the well-being of nations and 2) to seek to understand the relationship between money and debt and the sustainable stewardship of living capital (human, social, natural). I take as my challenge the visions of two key leaders in our time: Simon Küznets (architect of the US national income accounts), who recommended moving towards a fuller accounting of well-being, and Frederick Soddy (Nobel Laureate for atomic chemistry) who sought to reform money and align money creation with real wealth or living capital. In addition, I take up the challenges posed by Marilyn Waring (author of "Counting for Nothing" (1988), economist and former finance minister of New Zealand) and Herman Daly (ecological economist).

Daly and Cobb (1994) in *For the Common Good* remind us of some of the most pressing challenges in both economics. In the first 1989 edition of their book, they proposed a new measure of economic welfare, the Index for Sustainable Economic Welfare (ISEW), developed primarily by Clifford Cobb. This new accounting framework for the measurement of sustainable economic welfare was based on early work by Nordhaus and Tobin (1972), Zoltas (1981) and the Japanese measure of Net National Welfare. The development of the ISEW went through a remarkably transparent peer review with the debate being published in Cobb and Cobb (1994) *The Green National Product: a Proposed Index of Sustainable Economic Welfare*. The authors acknowledge the difficulties of such calculations of so-called sustainable income "Nothing is better calculated to make one realize the difficulty of estimating economic welfare over time than attempting to devise an index (ISEW)." (1994; p. 459).

In the same *For the Common Good* Daly and Cobb (1994) present an important yet obscure final chapter titled "Afterword: Money, Debt and Wealth." The authors explore the importance and general omission in economic literature of the issue of money, its nature, its creation process and misplaced concreteness around treating debt and money as real wealth. Having examined this issue more closely I am of the opinion that discussing sustainable well-being or welfare without addressing the issue of money creation will lead to unsatisfactory outcomes. That is, without fundamental changes in the current thinking of finance – the nature of money and its creation – the other significant economic structural changes they proposed would prove insufficient. Having constructed the 1998 U.S. GPI, developed natural capital accounts for Alberta, and studied the history of money creation, debt and wealth, I concur with Daly that without a fundamental inquiry into money and debt we cannot begin to understand how to move our societies towards a sustainable and socially equitable future. This paper is intended to challenge others to engage in this most important debate.

The U.S. Genuine Progress Indicator (Cobb, Halstead and Rowe 1994, and Rowe and Anielski 1998), and the Index for Sustainable Economic Welfare (Daly and Cobb, 1989 and Cobb and Cobb, 1994) have gained increasing attention as new monetary measures and accountancy of the welfare and sustainability of nations. The desired outcome of this work is a more honest accounting of economic performance and welfare of nations, which current economic indicators, such as GDP, fail to measure. Most importantly, the GPI in North America, and to a lesser degree the ISEW in Europe, have resonated strongly with average citizens, the media, and among advocates of social justice, environmental issues, and economic reform. To many, the GPI results simply confirm what many Americans and Canadians feel and are experiencing – the economy and stock exchanges may be soaring but average citizens sense the steady erosion of their economic quality of life.

In concert with the macro well-being metrics of the GPI, there has been an explosion of quality of life (well-being) and public policy outcome measurement initiatives throughout North America. Oregon *(Oregon Benchmarks*), Texas, Minnesota, and Alberta (*Measuring Up*) have led the way in provincial and

state public policy performance measurement and quality of life indicators work. Numerous city-states have also engaged in quality of life and sustainability measurement work, including Seattle, Multnomah County (Portland), Jacksonville (Florida), Edmonton, and Calgary. Most of these measurement efforts are using qualitative data sets without a direct connection to the economic indicators and income accounts from which GDP is derived. To date, no state or provincial GPI has been developed; once completed, the work of Prof. Ron Coleman of GPI Atlantic to develop a GPI for Nova Scotia will be the first provincial GPI.

As the GPI and ISEW continue to gain greater attention in the mainstream media, critics will emerge – particularly among some economists who may become inflamed by its architecture, methodologies, and promises as a single measure of welfare. Neumayer (1998) argues that the policy relevance of the ISEW is questionable because the measure "rests on arbitrary assumptions and can be shown to be invalid as a reliable indicator of welfare and sustainability." He argues that the ISEW is another example of falling into the measurement trap of "misplaced concreteness" – that is, a misplaced desire for a single, clear-cut indicator of both welfare and sustainability. These critiques are important as they represent opportunities for improvement so long as we agree that the desired outcome is a new system of accounting that tracks trends in sustainable development and societal well-being that are important for evidence-based public policy decision making.

While the GPI and the ISEW structure have their strengths and weaknesses, the strength of being an open architecture holds great promise for continued refinement that serves the needs of more informed and enlightened public policy decision making. In my experience, in the design of the Alberta Government's public policy performance measurement system, the adage of 'what gets measured gets attention' suggests that as long as we continue to use incomplete measures of economic well-being such as GDP, we will continue to arrive at unintended consequences as a result of our misplaced concreteness. Resolution of issues concerning the methodologies used to derive the values in GPI will take time, given the complexity and inherent value bias in issues as complex as welfare and sustainability. Such discussions must be guided by a genuine and common desire for a better measurement system that informs our public discourse around commonly held values for a civil society. The importance of new accountancy tools like the GPI and ISEW is that they provide hope that a new system for measuring total well-being and sustainable development is possible.

This paper examines the results of the most recent U.S. GPI results for 1998 (Rowe and Anielski, 1999). Secondly, the paper examines some of the criticisms that are emerging and it reflects on areas for improvement. Finally, the paper reflects on one of the most fundamental, yet rarely explored issues – the nature of money and the fundamental need for monetary reform to support the desired outcomes for sustainable development and improved welfare.

2. Economics (oikonomia) or Chrematistics (political economy)? That is the Real Question

"Aristotle made a very important distinction between "oikonomia" and "chrematistics." The former, of course, is the root from which our word "economics" derives. Chrematistics is a word that these days are found mainly in unabridged dictionaries. It (chrematistics) can be defined as the branch of political economy relating to the manipulation of property and wealth so as to maximize short-term monetary exchange value to the owner. Oikonomia, by contrast, is the management of the household so as to increase its use value to all members of the household over the long run. If we extend the scope of the household to include the larger community of the land, of shared values, resources, biomes, institutions, language, and history, then we have a good definition of 'economics for community.'" (Daly and Cobb, 1994; 138)

In *For the Common Good,* by former World Bank senior economist Prof. Herman Daly and theologian, Prof. John Cobb Jr. (1994), a clear and important distinction is made between "oikonomia" and "chrematistics"[1] – "the study of wealth or a particular theory of wealth as measured in money"[2] a branch of political economy relating to the manipulation of property and wealth so as to maximize short-term monetary exchange value to the owner. Daly and Cobb note "Oikonomia, by contrast, is the management of the household so as to increase its use value to all members of the household over the long run." As the authors note the current academic discipline of economics is much closer to chrematistics than to oikonomia. Certainly our modern world of Wall Street and Bay Street are dedicated to making money, the purest form of chrematistics. Indices and measures abound to measure the daily pulse of the money markets. But where are measures and indicators that reflect the true and genuine well-being of our households as we experience them in daily life or of our natural environment? Such measures are lacking and obfuscated by the din of chrematistics.

Daly and Cobb go on to explain, "*Oikonomia differs from chrematistics in three ways. First, it takes the long-run rather than the short-run view. Second, it considers costs and benefits to the whole community, not just to the parties to the transaction. Third, it focuses on concrete use value and the limited accumulation thereof, rather on abstract exchange value and its impetus toward unlimited accumulation. Use value is concrete: it has a physical dimension and a need that can be objectively satisfied. Together, these features limit both the desirability and the possibility of accumulation use values beyond limit. By contrast, exchange value is totally abstract: it has no physical dimension or any naturally satiable need to limit its accumulation. Unlimited accumulation is the goal of the chrematist and is evidence for Aristole of the unnaturalness of the activity.* ***True wealth is limited by the satisfaction of the concrete need for which it was designed. For oikonomia, there is such a thing as enough. For chrematistics, more is always better***." (1994, p. 139)

This paper will examine the trends in virtual wealth (financial) and true wealth (living capital), distinguishing between that which makes life worthwhile and wealth measured in terms of money. We will compare the evidence of a virtual chrematistic world versus the real and living world of oikonomia.

3. The GDP: Flawed Measure of Economic Progress?

The late Senator Robert Kennedy just shortly before his assassination in 1968 provides a most poignant summary of the shortcomings of the GNP/GDP as a measure of well-being of the nation:

"The Gross National Product includes air pollution and advertising for cigarettes, and ambulance to clear our highways of carnage. It counts special locks for our doors, and jails for the people who break them. GNP includes the destruction of the redwoods and the death of Lake Superior. It grows with the production of napalm and missiles and nuclear warheads... And if GNP includes all this, there is much that it does not comprehend. It does not allow for the health of our families, the quality of their education, or the joy of their play. It is indifferent to the decency of our factories and the safety of our streets alike. It does not include the beauty of our poetry or the strength of our marriages, or the intelligence of our public debate or the integrity of our public officials... GNP measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country. It measures everything, in short, except that which makes life worthwhile."

By adding up the monetary transactions in an economy and calling this prosperity obscures an honest accounting of the well-being of oikonomia and that, which makes life worthwhile, including our natural environment.

Waring (1988) points out, the origins of national income accounting and GNP/GDP metrics arose out of the British war economy in 1939. At the time John Maynard Keynes developed the ideas that would lead to development of national income accounts now used by virtually every nation. His work became the basis of managing the whole operation of the British war economy and was first presented in a joint paper by Keynes and (later, Sir) Richard Stone entitled "The National Income and Expenditure of the United Kingdom, and How to Pay for the War." Understanding the dynamics of the monetary transactions in the UK economy was important as the basis for taxation to finance the war. Keynes provided a general theory that the total amount of income (or economic activity) in a country is determined by: consumption (households), investment (business) and government spending. Richard Stone would later define how each of these three factors would be measured and the interactions between them.

This uniform accounting system was not unlike that which corporations were using at the time. We then have the emergence of a chrematistic accounting system, using the firm as a model for accountancy, with a focus on monetary transactions related to the buying and selling of goods and services by households, business and government. At the earliest stages national income accounting made a clear departure from an account of the well-being of the oikos or households of the nation, as average people experience economic activity. The war was the priority and the well-being of the households of the nation and the environment were secondary considerations. This important historical context provides sobering evidence of why after more than 50 years virtually every nation still uses a war-based, monetary transaction-focused national accounting system. But why? Was this an intentional obfuscation of economic (oikonomia) well-being of the nation with a war-based measurement indicator (GDP/GNP) and national accounting system? One must wonder why after years no serious alternative to GDP and national income accounting has emerged. Why have there been so few voices in economics that have pursued reform of our national accounting systems to align them with measuring genuine well-being, as average citizens would define quality of life?

Marilyn Waring is one such voice. As former finance minister for New Zealand and professor of economics at Queenstown she has spent considerable energy studying this history of national income accounting, the fertile fallacies of eternal economic growth, and the obfuscation of measuring that which makes life worthwhile, such as unpaid women's work and the unpriced services of nature (Waring, 1988). After leaving politics she has become an international advocate for change to the way nations account for well-being. Her personal epiphanies resulting from careful study of the United Nations System of National Accounts (UNSNA) led to this stinging indictment of not only politicians but also economists as to their knowledge about what economic growth means and how it is measured:

"*The successful transmission of propaganda relies heavily on cliché or rhetoric…Mathematical, mechanical and medical anxieties, and other mystifications may represent a deliberate obfuscation; an effort to remove the discipline and its information from the powerless. Such political exclusivity is also useful to disguise vulnerability and to keep from telling the truth. They (people) have heard terms like national income, balance of payments, Gross National Product (GNP) and Gross Domestic Product (GDP), used with seeming alacrity by businessmen, politicians and newspaper editors…it is my distinct impression that, with the exception of those trained in economics, most of these people don't know what they're talking about. They bluff it, reliant on human nature, intimidation, and embarrassment to silence those who might be curious to ask just what the national income is."*

Aleksandr Solzhenitsyn (1974) noted that "*Society must cease to look upon 'progress' as something desirable. 'Eternal progress' is a nonsensical myth. What must be implemented is not a*

steadily expanding economy but a zero growth economy, a stable economy. Economic growth is not only unnecessary but ruinous." He too was identifying a distinction between chrematistics and oikonomia.

Simon Küznets, who one the 1971 Nobel prize winner for economics, was at the forefront of development national income accounts following World War II. In 1941 he published a significant work entitled "*National Income and Its Composition 1919-1938*", s and the GNP/GDP accounting structure, spent much of his life advocating reform of the GNP/GDP measure. Ironically, despite his significant contribution to national income accounting, Küznets was actually denied a university chair in economics, being termed a "statistician"[3] (Waring, 1988; 43). Küznets (1965) cautioned:

"*the welfare of a nation can scarcely be inferred from a measurement of national income as defined by the GNP…goals for 'more' growth should specify of what and for what.*"

By 1947 Küznets (1954) later wrote:

"The refusal to extend discussion in (social welfare) directions to a fuller coverage of consumption levels, of levels of living, and have experimentally established functional equivalents – is not due to the possibility low yield of such explorations. On the contrary, they promise results of great value. They might explain more satisfactorily… the basic differences between industrial and pre-industrial economies, and the conditions on which the latter can be industrialized… They might provide a more effective basis for comparison and help overcome the difficulties imposed by differences in the goods composition of national product. Studies of nutrition indicate unmistakably that pre-industrial societies manage to obtain the basic vitamin supply at much lower economic costs, and hence at much lower prices, than a price comparison of identical commodities would indicate. That we have paid so little attention to these aspects of the comparison is due largely to a feeling that the study has not advanced sufficiently to permit abandonment of the more traditional approach."

In this statement Küznets was referring to the consequences of the refusal to extend the coverage in the system of national accounts to include subsistence production (Waring, 1988; 43). Küznets was undaunted by the apparent wall of silence from much of the economic community to his ongoing challenge to expand the measurement of well-being to align more honestly with oikonomia versus chrematistics.

Küznets went so far as to recommend the eventual construction of a single bottom line for national well-being as if foreshadowing the eventual attempts beginning with Tobin and Nordhaus (1971) and advancing with the Index for Sustainable Economic Welfare (1989) and the Genuine Progress Indicator (1994). Küznets (1965) noted:

"It does seem to me, however, that as customary national income estimates and analysis are extended, and as their coverage includes more and more countries that differ markedly in their industrial structure and form of social organization, investigators interested in quantitative comparisons will have to take greater cognizance of the aspects of economic and social life that do not now enter national income measurement; and that national income concepts will have to be either modified or partly abandoned, in favour of more inclusive measures, less dependent on the appraisals of the market system… The eventual solution would obviously lie in devising a single yardstick that could then be applied to both types of economies – a yardstick that would perhaps lie outside the different economic and social institutions and be grounded in experimental science (of nutrition, warmth, health, shelter, etc.)[4]

While Küznets' challenge was sustained for most of his career, the economics profession, as a whole, has been largely indifferent to taking up one of the greatest empirical challenges of this century.

In his most recent public address in May 1999, John Kenneth Galbraith noted that one of the most important "*unfinished business*" issues for economics as we approach the new millennium include: the shortcomings of GNP/GDP as an economic measure; economic instability (cycles of boom and bust), and; poverty and income inequality.[5] Galbraith noted that "*there is a major flaw in measuring the quality and achievement of life by the total of economic production – (GNP/GDP) –the total of everything we produce and everything we do for money*." Galbraith continues to echo the words of Simon Küznets by noting that measures such as GNP override and obscure deeper and more important aspects of economic life, failing to "take sufficient account of the value and enjoyment of what is produced."

Herman Daly, Professor at the University of Maryland School of Public Affairs, former senior economist at the World Bank, and co-founder of the International Society for Ecological Economics (ISES) has been one of the most important voices for raising awareness of the shortcomings of modern economics and redefining our notion of economic progress and measurement of sustainable well-being. In his latest writings Daly (1996; 111-112) notes "economic development as it is currently understood and measured is neither sustainable for a long future nor generalizable to all presently living people….the macroeconomic activity of national economic growth does not conceive of as having an optimum extent…GNP is a conflation of costs, benefits and changes in accumulation, and is no better a guide to determine the optimum level of economic activity than the stock of gold bullion." Daly (1996; 113) suggests that instead of one income account, the GNP/GDP, nations adopt: 1) a benefit account (measures the value of services yielded by all accumulations); 2) a cost account (measure the value of depletion, pollution and those kinds of labour that are irksome), and; 3) capital accounts (inventory of the accumulation of stocks and funds (produced and natural capital, and ecosystem infrastructure) and their ownership distribution.

His seminal work with theologian John Cobb Jr. in *For the Common Good* (1989,1994) was the first to reveal the Index for Sustainable Economic Welfare (ISEW) which was then reinvented by Redefining Progress (San Francisco) by Clifford Cobb and Ted Halstead to become the Genuine Progress Indicator. The ISEW-GPI attempts to accomplish at least the first two reforms recommended by Daly, though with considerable improvements required. Still lacking is a true capital account that would show the state of all living and produced capital as well as the distribution of ownership. Building on the earlier work by Tobin and Nordhaus in 1971 (the Measure of Economic Welfare), the ISEW represented a significant advance in revising the GDP and addressing the earlier challenges of Küznets to move to a single yardstick of well-being. One which would account for the depreciation of living capital, the value of unpaid work and regrettable social and environmental expenditures, so as to provide an account of the sustainable well-being of the nation.

Other meaningful advances in measuring the well-being (Sharpe, 1999), in either economic or non-monetary terms, include: 1) the Index of Economic Well-Being (IEWB) developed by Sharpe and Osberg at the Centre for the Study of Living Standards; 2) the Index of Social Health (ISH) developed by Marc Miringoff at Fordham University and estimated for Canada by Human Resources Development Canada by Brink and Zeesman (1994); 3) the Index of Living Standards (ILS) produced by the Fraser Institute; 4) the Human Development Index (HDI) developed by the United Nations Development Program; 5) the Quality of Life Index (QOL) developed by Ed Diener of the University of Illinois; and 6) the Index of Social Progress (ISP) developed by Richard Estes of the University of Pennsylvania.

Despite these efforts, the world appears to suffer from a collective amnesia of history and obfuscation of the real issues as they pertain to economic growth and money. Nevertheless, there is hope when mainstream economists are beginning to openly acknowledging that GNP/GDP should not be misinterpreted as a measure of welfare. Most disturbing is that many economists are seemingly unaware of the history of these measurement systems and have been rarely explored in the politic of their creation

or the intended outcomes of their use. The fact remains, however, that GDP remains one of the key metrics of economic performance, the basis for international comparisons of well-being (including one of four variables in the UN Human Development Index), and key guidance tool for public, fiscal, and monetary.

4. Why the GDP Falls Short

As a gauge of economic performance and well-being, the GDP embodies at least seven major fallacies:

First, the GDP regards every expenditure as an addition to well-being, regardless what that expenditure is for and the effects. By this reasoning the nation's economic hero is the terminal cancer patient going through an expensive divorce, whose car is totaled in a twenty-car pile-up. The economic villain is the healthy person in a solid marriage that cooks at home, walks to work and doesn't smoke, gamble or spend the evening surfing Web porn. The hero borrows and spends; the villain pays cash and saves for the kids' education. What economists call "growth", in other words, is not always the same as what most Americans would consider good.

Second, the GDP ignores the crucial economic functions that lie outside the realm of monetary exchange. GDP excludes the value of unpaid housework, child care, volunteer work, and leisure. Parents do real work. So do neighbors, communities, open spaces, rivers and oceans, the atmosphere, and trees. Anyone who doubts this might try getting along without them. Such things contribute more to well being than does much that we buy from the market. Yet the GDP regards these life-sustaining functions as worthless - until the economy destroys them, and we have to buy substitutes from the market or from government. Then the GDP says that the economy has "grown."

When parents default and kids need counseling or foster care, the GDP go up because money has changed hands. When a parent cares for kids at home the GDP stagnates; when that same parent takes care of other peoples' kids at day care the GDP goes up. When the city cuts down shade trees to widen a street, and homeowners have to buy air conditioners for cooling, the GDP goes up again. It looks like economic growth; but in reality no increase has occurred. Instead, something that used to be free now costs money; social and environmental decay has been transmogrified into "growth" through the myopic lens of the GDP.

Third, the GDP does not account for natural resources that are required to sustain current and future economic development implying that the future has no value. The GDP excludes natural resource capital, environmental resources-services, human resources and research and development. All that matters is the present. The implications of current economic activity for our kids and grandkids do not enter the calculation. For example, the GDP counts the depletion of natural resources as current income rather than as the liquidation of an asset. This violates both basic accounting principles and common sense. Similarly, saving doesn't add much to the GDP; economists actually chide Japan for its high savings rate. But maxing out on credit cards makes it soar.

Fourth, the GDP ignores totally the distribution of income, the social costs of inequality and poverty. Changes in GDP are insensitive to income inequality, poverty and the distribution of personal consumption and wealth. Even assuming that the GDP represents a rising tide of beneficence, it can't have that effect unless all share. If the economy is getting bigger, but the benefits are going mainly to those who need it least, the result are material accretion but not economic advance. This is true even in conventional economic terms. For a Mark McGuire or a Michael Jordan, another thousand dollars is merely tip money. For a family struggling on the minimum wage, a tenth that amount can mean the difference between macaroni and chicken for many nights.

Fifth, the GDP contains intermediate and regrettable expenditures that do not contribute to economic welfare. These include elements of government spending such as defense spending. It also includes personal spending such as cost of commuting to work, costs related to crime, environmental protection and automobile accidents.

Sixth, GDP includes expenditures on education, health care, social services and environmental protection that do not necessarily reflect the outcomes or returns on investment from such expenditures. Such outcomes might include physical well-being (e.g. life expectancy), intellectual and labor market skills, educational attainment, and the quality of the environment.

Seventh, GDP does not directly measure investment in social capital. Social capital includes the investments in the health and wellness of communities, social institutions, and democratic processes.

Add these fallacies together, and it helps explain why the opinion establishment thinks the future is rosy, and why the many Americans are worried nevertheless.

5. The Genuine Progress Indicator

"The refusal to extend discussion in (social welfare) directions to a fuller coverage of consumption levels, of levels of living, and or experimentally established functional equivalents is not due to the possibly low yield of explorations….(but) is due largely to a feeling that the study has not advanced sufficiently to permit abandonment of the more traditional approach" (Simon Küznets, 1947).[6]

The U.S. Genuine Progress Indicator (GPI) and its predecessor, the Index for Sustainable Economic Welfare (ISEW) provide the basis for developing a new accountancy to address Küznets' challenge. The U.S. GPI released in 1995 and since updated for 1997 and 1998 is one of the most ambitious attempts at calculating the total benefits and costs related to oikonomia of the U.S. It remains one of the most important attempts to measure sustainable current welfare. First developed by Clifford W. Cobb (son of John Cobb Jr.) the ISEW or GPI has now been replicated for Canada, Australia, Germany, Austria, Italy, Chile, South Korea, the Netherlands, Sweden and the United Kingdom, with minor methodological modifications.[7] More recently, Prof. Ronald Colman of *GPI Atlantic* has begun to develop a more robust set of GPI accounts for Nova Scotia. Cobb and Cobb (1994) were unusually open to critique of their original ISEW creation publishing *The Green National Product* which contained a remarkably open critique by other practioners and scholars. Both Cobbs continue to believe that the GPI/ISEW is meant as a starting point and should remain an open and fluid architecture refined according to the measurement needs of each jurisdiction.

The re-release of the 1997 U.S. GPI in 1999 by Mark Anielski, a Canadian environmental economist and Senior Fellow of Redefining Progress and economic journalist Jonathan Rowe, and the 1998 GPI in the fall 1999 (Cobb, Goodman and Wackernagel) suggest that the GPI has sustained both interest and momentum as a meaningful measure of economic well-being. Indeed the sustained resonance of the GPI phenomenon in the U.S. and Canada is an important point of reflection for economics, political science, sociology, and organization behavior. The GPI and its message is striking a deep chord within those who have reflected on the nature of economic growth and worked in the measurement of quality of life.

Simon Küznets left us with a daunting challenge to seek the "eventual solution", that is, "devising a single yardstick" and "more inclusive measures" that would "take greater cognizance of the aspects of economic and social life that do not now enter national income measurement (GDP)."[5] That challenge is begging to met with the GPI and other emerging economic well-being indicators, understanding that on

one method or framework will satisfy our desire to measure economic well-being. Differences are already evident between, for example the Index for Economic Wellbeing (Osberg and Sharpe, 1999) and the ISEW/GPI framework. The IEW, like the UN Human Development Index adopts a weighting scheme for the indicators that comprise they index while the GPI/ISEW uses absolute cost and benefit values in calculation of its genuine progress "bottom line." Using weighting schemes in the development of indices raises the obvious question as to whose values are being reflected in the weights applied to the indicator set and are they aligned with the values held by the society or communities they are intended to measure? The same can also be said for the GPI/ISEW as to the estimation of the cost of environmental and social liabilities, where such values are not otherwise revealed through actual expenditures or revenues in the market.

The relationship between economic progress and human satisfaction - that is, between outer circumstance and inner experience - is slippery at best. No accounting will ever answer to the complexities of the human heart. Still, it is possible to do a lot better than the GDP. We can begin to acknowledge the differences between costs and benefits, and equality and inequality. We can admit that families, communities and the natural environment have value; and we can construct an accounting that says our kids and grandkids matter as much as we do.

The GPI begins with personal consumption expenditures as a baseline, the way the GDP does. Personal spending by households makes up roughly 65 percent of the US GDP. The GPI then makes a series of 24 adjustments for unaccounted for benefits, depreciation costs (for social and natural capital) and deducts regrettable social and environmental expenditures. In essence, the GPI moves towards the kind of common sense accounting that a household or a business would do.

- **The GPI adds a cost side to the growth ledger**. It subtracts defensive expenditures such as the costs of crime and environmental decay. It includes depreciation for the using-up of natural resources, and accounts for such things as long-term environmental damage and the loss of leisure time. The GPI also subtracts certain kinds of outlays that few Americans would regard as evidences of well-being, such as those related to family breakdown and commuting

- **The GPI begins to account for the aspects of the economy that lie outside the realm of monetary exchange**. It assigns value to the life-sustaining functions of households, communities and the natural environment so that the destruction of these, and the replacement of them with commoditized substitutes, no longer appears as growth and gain. It also counts the value of services from public infrastructure such as highways and bridges that the GDP ignores.

- **The GPI acknowledges that the economy exists for future generations as well as for the present ones.** When we deplete the earth's resources, degrade the natural environment and weaken the social structure by displacing it with things and services people have to buy, we are robbing our grandkids' trust fund. The GPI treats such destruction as cost rather than as gain.

- **The GPI adjusts for income disparities.** A growing gap between the very rich and everyone else involves real costs that the nation's economic accounting should not ignore. If the fruits of the economy are falling mainly for the benefit of a particular group or class, then the economy is not becoming better even if it's becoming bigger.

The GPI has resonated most with average citizens and has resonated with some media. As we might expect, criticism has also come from some economists, who question specific methodologies or valuation techniques used in estimating costs or benefits (Neumayer, 1998). For example, some may take exception to putting a "price" on income inequality by adjusting personal consumption expenditures

downwards according to an index of income inequality (the gap between rich and poor) arguing that you cannot put a price on issues of equity. Some might question putting an economic cost on the erosion of social capital, such as imputing a cost of family breakdown. Energy economists and petroleum executives, might criticize the treatment of nonrenewable resource depletion as a cost using the replacement cost of renewable energy, thus making the assumption that continued use of nonrenewable energy is environmentally and economically undesirable. Others argue that economists understand the shortcomings of the GDP and that the national income accounts were never meant to measure welfare of the nation.

These criticisms are important since they help to strengthen the framework and hopefully move the discussion and framework development forward. The importance of the GPI and the ISEW is that it provides a more complete picture of trends in the state of the households and natural environment that can only lead to more informed public policy dialogue. The GPI is only a starting point; a kind of barn-raising exercise where the future will be one of structural and cosmetic "home improvements" involving multiple disciplines to refine the original structure. The GPI/ISEW and similar indicator framework developments represents an exciting turning point in history. We may be on the verge of addressing the real intentions of original 1953 UN group of experts who developed the system on national income accounts noted that the system should "yield information on certain structural properties of the economy which is useful *if not essential background for public policy formulation*.[8] We may at last be building into our national accountancy the needs of the people and households of the nation and the health of our environment, which provides the basis of our prosperity.

5.1 Specific Elements of the GPI

For the benefit of new readers to the subject of the architecture of the GPI/ISEW it is useful to layout the 25 components of the GPI account as follows:

a. Personal Consumer Expenditures

The GPI begins with personal consumption expenditures on goods and services by households, which constituted 65 percent of U.S. GDP.

b. Income Inequality

Personal consumption expenditures are adjusted for changes in inequality in the distribution of personal income, using the commonly used Gini coefficient. The Gini coefficient measures the gap between the richest income quintile and all other income quintiles. The U.S. Gini coefficient is normalized creating an index where the year 1968, the lowest rate of income inequality in the U.S, is used as a benchmark (100 basis points) against which the 1950-1997 time series is indexed. This index is then used to adjust personal consumption expenditure figures by dividing through by this index.

c & d. Value and cost of consumer spending on durable goods and household capital

An estimated value of services derived from the initial benefits of the purchase of a stock of consumer/household durable goods (e.g. appliances, furnace, dishwasher) whose annual services are valued consistent with the sum of the depreciation rate and the interest rate of such goods and services as economic theory defines (i.e. the opportunity cost of income invested). To avoid double counting, an adjustment is made for the cost of these consumer durables by subtracting in the GPI the actual expenditures on consumer durables. Focusing on the net annual service that household appliances and

equipment provide rather than on the purchase price, corrects the way GDP treats money spent as if it were the same as the value received from the durable good.

e. Cost of household pollution abatement – An estimated of the cost of household defensive expenditures on pollution abatement and control equipment such as air and water filters to protect against household pollution is included based on actual expenditure data.

Consumer Spending Discounted for Intermediate or Defensive Expenditures

f. Cost of commuting – the economic cost of travelling to and from work using either public transportation or private vehicles, as well as an estimate of the time use while travelling.

g. Cost of crime - the costs associated with spending on crime prevention (alarm systems, locks)

h. Cost of automobile accidents - costs associated with medical and legal expenses, and expenditures related to lost or damaged property.

i. Cost of family breakdown – estimated economic costs of expenses for legal fees, counseling and the need for separate residences as a result of separation and divorce, as well as an estimated cost of damage to the well-being of children. In addition an estimated cost of T.V. viewing is included.

Non-Market Production and Leisure

j. Value of housework and parenting – the economic value of the number of unpaid hours spent on household tasks such as cooking, cleaning and childcare are estimated multiplied by the average real wage rate.

k. Value of voluntary work – is the economic value of unpaid hours spent volunteering multiplied by the average real wage rate.

l. Loss of leisure time - the economic value of lost leisure hours between 1950-1997 in relation to the year with the greatest leisure time.

Government Spending

In general, the GPI excludes most government spending deeming these as intermediate, protective or defensive expenditures that are necessary to maintain rather than enhance quality of life. The one exception is:

m. Services of streets and highways - the economic value of services to persons from the stock of streets and highways

External Factors

n. Cost of underemployment – represents the gap between full-time and involuntary part-time work, measured in hours and multiplied by the average real wage rate.

o. Air pollution – costs of damage to agricultural vegetation, materials damage, cleaning, acid rain damage, reduced urban property values and aesthetics adjusted annually by the index of air quality.

p. Ozone depletion – is linked to world production of chloroflourocarbons (CFC's) and other ozone-depleting chemicals. The long-term costs to health and ecological effects re determined by multiplying cumulative world production of CFC's by an arbitrary price per kilogram.

q. Water pollution – economic costs to recreation, aesthetics, ecological and property values, plus the quality of household and commercial water supplies adjusted annually by changes in water quality and siltation rates.

r. Noise pollution – based on World Health Organization estimates, the value is adjusted annually by changes in noise pollution based on the rate of industrialization and motor vehicle traffic.

s. Cost of depletion of non-renewable resources – the cost of depleting non-renewable energy supplies (oil, gas, coal) is determined by substituting the production of non-renewable energy by a barrel equivalent of energy derived from ethanol produced from corn. The quantity of corn required to replace oil and gas production is multiplied by a price per bushel to obtain a value. The price of corn is higher than present values reflecting increased demand that may result and no agricultural subsidies.

t. Loss of farmland – represents the value of farmland acreage lost to urbanization plus a discounting of existing farmland as a result of deterioration of soil quality.

u. Loss of forests – represents the value of ecological damage as a result of the cumulative number of acres of "old-growth" forests harvested and an estimated cost per acre.

v. Long-term environmental damage – represents the costs of global warming linked to current consumption of fossil fuels and nuclear power whereby long-term costs is estimated by multiplying a per barrel equivalent arbitrary price (a tax) on current production of non-renewable energy to compensate future generations for economic damage of global warming.

w. Loss of wetlands – represents the estimate cost of ecological damage as a product of the cumulative number of acres of wetlands drained and an estimate of the cost per acre.

x. Net capital investment - the difference between the change in the net stock of fixed capital (produced business fixed assets -- non-residential construction and machinery and equipment) and the amount of investment required to keep the net stock of capital per worker constant.

y. Net foreign lending/borrowing – the annual change in the U.S. net foreign investment position is used as a measure of the economic sustainability of a nation reflecting the extent to which it relies on foreign funding to finance its current consumption.

6. The 1998 US GPI Results

The 1998 U.S. GPI update by Cobb, Goodman and Wackernagel (1999) reveals the same trend shown in the 1997 update by Anielski and Rowe (1999). While the economy and stock markets boomed reaching record highs, the GPI continued to slide as it has for the past two decades (see figure 1 and 2).

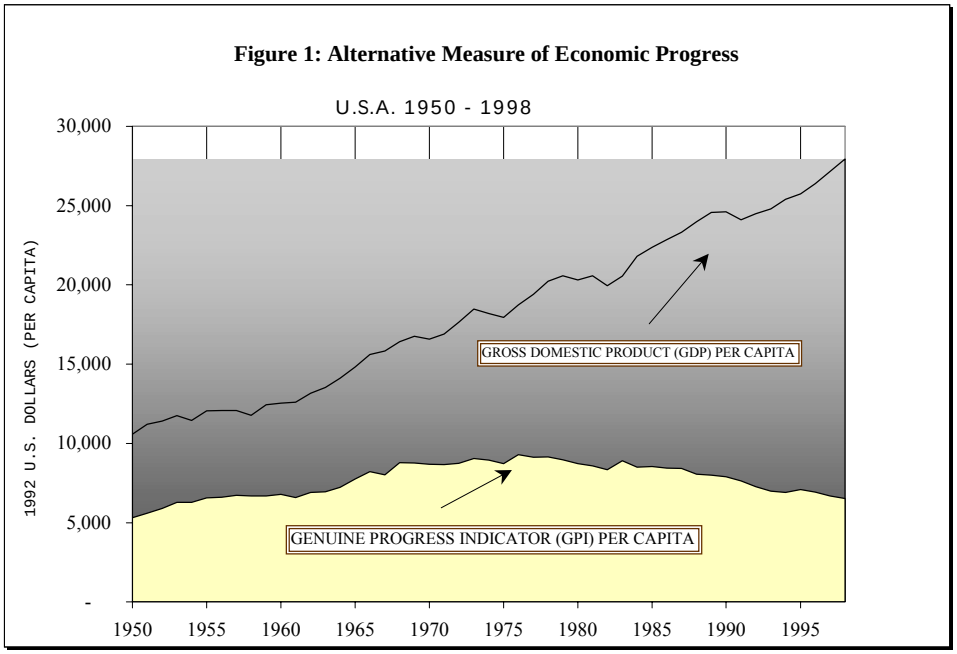


Figure 1

The long term trends in the GDP (per capita) and the GPI (per capita) in 1992 chained-dollars shows that while the GDP has steadily climbed, the GPI peaked in the mid-1970s and since declined.

Figure 2

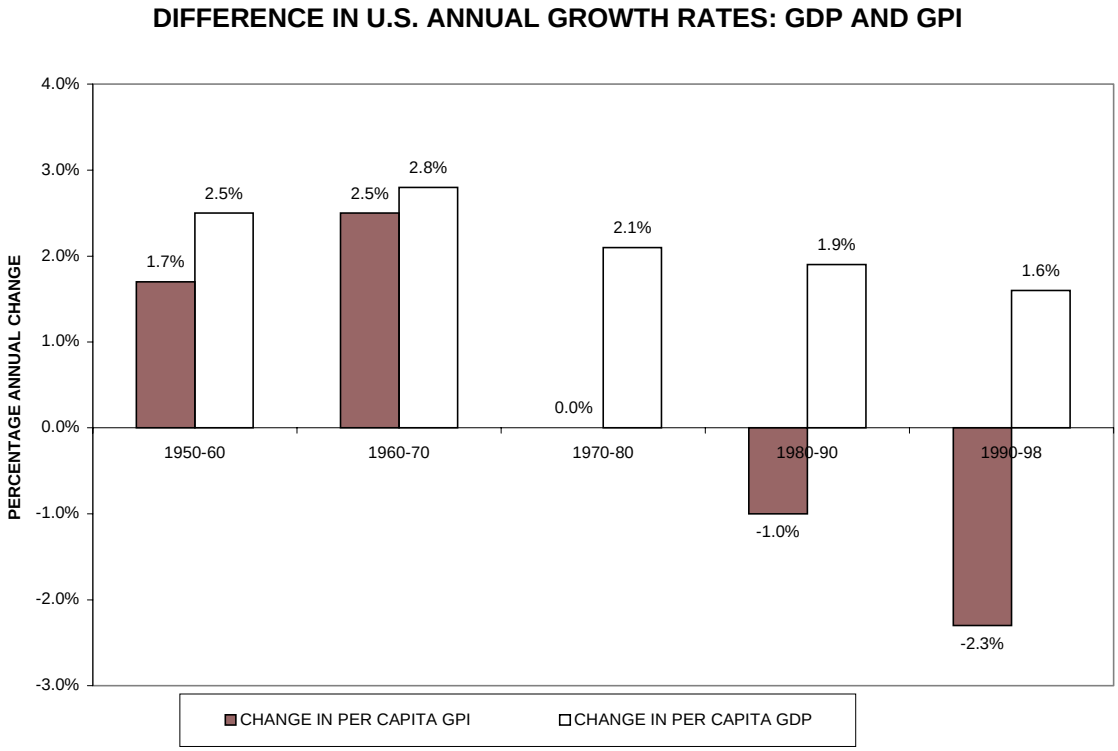


Table 1. Gross Domestic Product (GDP) Versus Genuine Progress (GPI), 1950 to 19987

	GDP	GPI	GDP per capita	GPI per capita
	(billions of 1992 dollars)		*(1992 dollars per capita)*	
1950	1,600	810	10,582	5,319
1960	2,263	1,229	12,525	6,805
1970	3,398	1,788	16,569	8,721
1980	4,615	1,984	20,310	8,732
1990	6,136	1,973	24,600	7,911
1998	7,5520	1,770	27,939	6,549
Total Change 1950 – 1998	+ 5,941	+ 960	+ 17,357	+ 1,232

Table 2. The 1998 GPI Account[9]

	$ Billions (1992 dollars)
Personal Consumption	5,153
Personal Consumption Adjusted for Income Inequality	4,385
Additions (benefits)	
Value of Housework and Parenting	1,911
Services of Household Capital	592
Services of Highways and Streets	95
Value of Volunteer Work	88
Net Capital Investment	45
Reductions (costs)	
Depletion of Nonrenewable Resources	- 1,333
Long-term Environmental Damage	- 1,054
Cost of Consumer Durables	- 737
Cost of Commuting	- 386
Loss of Wetlands	- 363
Cost of Ozone Depletion	- 306
Loss of Leisure Time	- 276
Net Foreign Lending or Borrowing	- 238
Loss of Farmland	- 130
Cost of Auto Accidents	- 126
Cost of Underemployment	- 112
Loss of Old Growth Forests	- 83
Cost of Family Breakdown	- 59
Cost of Water Pollution	- 50
Cost of Air Pollution	- 38
Cost of Crime	- 28
Cost of Noise Pollution	- 16
Cost of Household Pollution Abatement	- 12
Genuine Progress Indicator	**1,770**
per capita GPI (in dollars)	6,459
Gross Domestic Product	7,552
per capita GDP (in dollars)	27,939

Table 2 shows the magnitude of the various components of the GPI with the positive value of unpaid housework, the environmental liability (cost) of nonrenewable resource use, and the for income inequality being the most significant components in the GPI. One of the important debates which the GPI account raises is how depreciation costs and regrettable expenditures should be defined (as positive or negative contributions to well-being) as well as the methodologies for imputed monetary values for what many would consider non-monetary aspects of quality of life. The GPI account is a robust and transparent enough framework to make adjustments, add or eliminate variables, and to allow individual communities, states and nations decide what items they would measure that align with the values of their community. Perhaps the most important observation is that any measurement system for assessing oikonomia must be aligned with what citizens consider important to their quality of life and the well-being of their natural environment.

The 1998 GPI results show a slight moderation in the downward trend, however primarily due to a 4.9% increase in personal consumption expenditures and slight improvement in income inequality (as measured by the Gini coefficient index). The 1998 GPI continued its decline due to increasing social, environmental and economic costs that the GDP ignores. Though the economy has been growing, the benefits of this growth and stock market appreciation are not evenly distributed. Economist Paul Krugman notes that 70% of the rise in average family income between 1977 and 1989 went to top 1% of the wealthiest families in the US. (www.prospect.org/cgi-bin/printable.cgi)

The main highlights of the 1998 GPI are (see table 2):

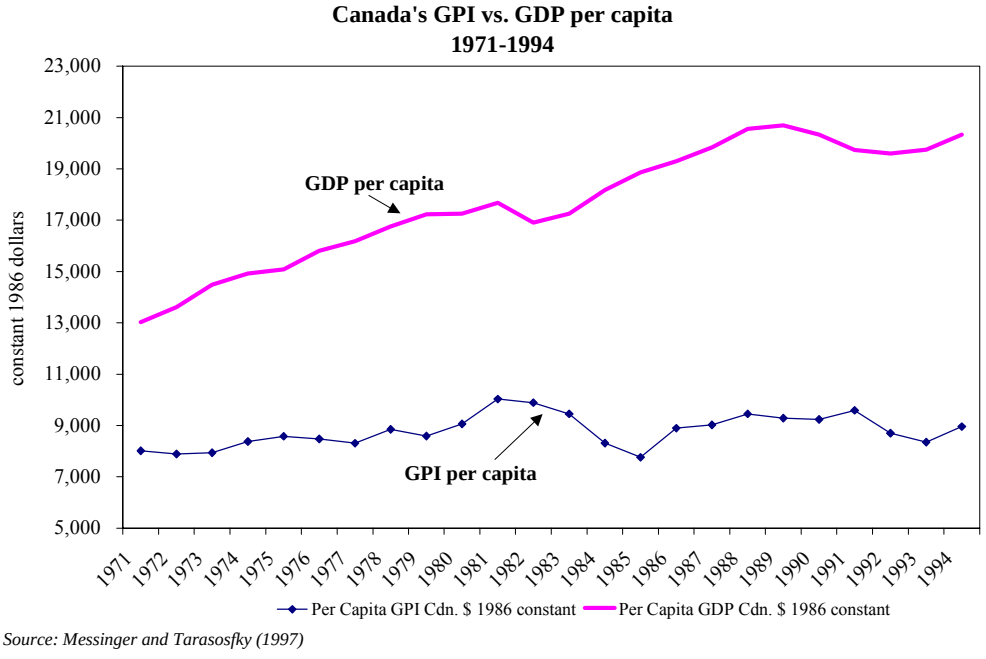
- Overall the GPI in 1998 declined (albeit at a slower rate) to $6,649 per capita while the GDP per capita rose to $27,939.
- The gap between the rich and everyone else while expanding dramatically since 1968, moderated slightly in 1998. By 1998 the richest fifth increased their share of total family income to 49.2% versus a mere 3.6% of total received by the poorest fifth, due partly to the surge in value of equities.
- A three fold increase in net foreign borrowing (increase in foreign ownership) compared to 1996, most of which has gone to fuel a stock market bubble, which in turn fuels increased consumption;
- Continued depletion of natural capital including farmland, wetlands, forests, and nonrenewable energy reserves. However, reductions in air pollution has resulted in reduced health costs and damage to crops.
- Less underemployment, divorce, and household costs of crime, and more time devoted to household work and volunteer work suggests improvements in quality of life in 1998.
- The cost of crime (losses due to burglaries and theft) declined 1% in 1998, though government spending on prisons (which contributes to the GDP) continues to rise.
- Involuntary employment has dropped with the social cost of underemployment plummeting 35% since 1993.
- Family breakdown, measured by divorce, stabilized with number of divorces falling to 1.13 million in 1998 compared to the peak of 1.21 million in 1992. However, family time spent television watching increased over the same period.

The 1999 GPI report concludes that the long-term downward trend of the GPI since the 1970s was not necessary and could have been prevented through: 1) a reduction in carbon dioxide emissions from fossil fuels to 1950 levels; 2) no deterioration in income inequality since 1968, and 3) if trade deficits and surpluses had balanced each other out on average. Overall, the decline of the GPI in the 1990s has been the most rapid in five decades. It suggests that the financial boom of the 1990s, with the associated shopping spree, has risen upon an eroding real economy that conventional indicators hide. Increasingly the U.S. is living off its capital – social and environmental as well as financial.

6. Canada's GPI vs. US GPI

Preliminary estimates of a GPI (using the same methods as the U.S. GPI) for Canada by Hans Messinger and Abe Tarasofsky (1997) revealed a similar growing gap between Canada's GDP and the GPI, as shown in Figure 3. However, unlike the U.S., Canada's GPI has remained relatively stable since its peak in 1981. Between 1971 and 1994 Canada's GPI per capita increased by 11.7 percent, while the U.S. GPI per capita fell by 21.5 percent. At the same time Canada's GDP per capita increased at a faster rate than the U.S. rising 56.1 percent while U.S. GDP per capita rose 50.1 percent per capita. The Canadian GPI estimates have not been updated since 1997 and future GPI estimates require considerable work to address methodological challenges. Professor Ron Colman, founding director of GPI Atlantic, is conducting important methodological research in improving the GPI methodologies in application to Nova Scotia but also to Canada.

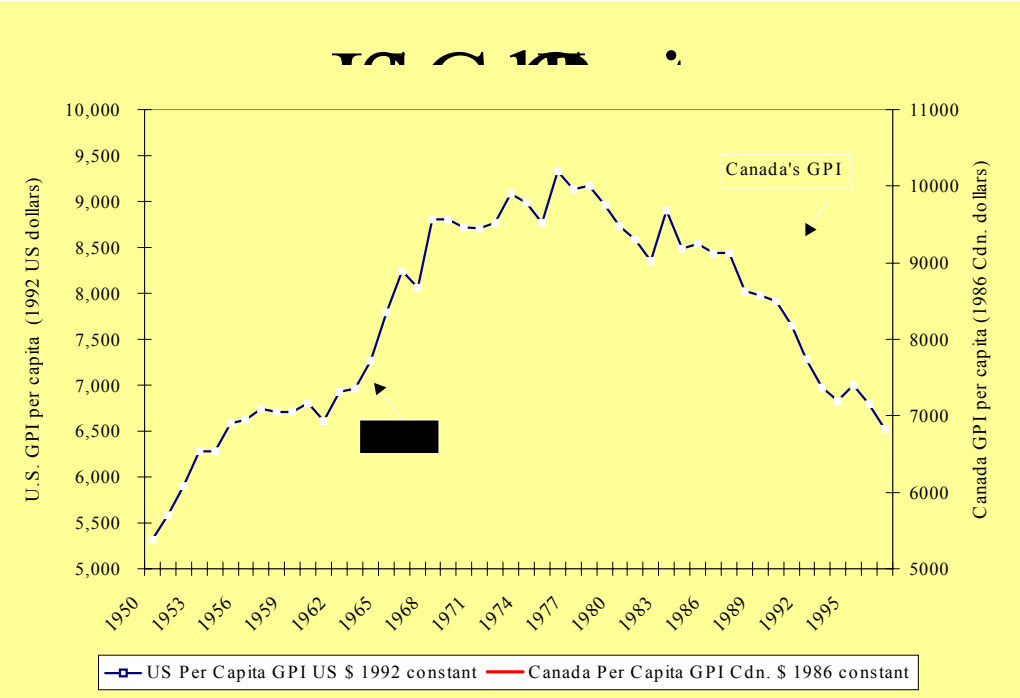
Figure 3



Source: Messinger and Tarasofky (1997)

Comparing Canada's preliminary GPI estimate with the US GPI shows that while the US GPI declined steadily since the mid-1970s the Canadian GPI has remained relatively stable (see figure 4). This suggests that while those who might argue the US has outshone Canada in terms of chrematistic economic prosperity (including productivity gains), the overall state of oikonomia in Canada would appear to be better. We could also point to the UN Human Development Index (1999) that continues to rank Canada as best overall nations for qualitiy of life (that includes GDP per capita, life expectancy, literacy and numeracy scores).

Figure 4



7. Improvements

As with all measurement systems, there is continual scope for improving methodologies. The GPI was designed to be an open and transparent architecture and available to any community to adopt or modify its original framework. The primary benefit of the GPI is to provide decision makers with a more holistic account of the economic (oikonomia) well-being of their community. It is natural to expect differences of opinion in what should or should not be included in a well-being accounting system, and I would argue that diversity and customization (versus homogenization and standardization) should be encouraged. Any accounting system of well-being must be aligned with the values, experiences and physical realities of the citizens of a community. Without such alignment the indicators and accounts are meaningless and irrelevant. If we can agree on desirability of such a well-being accounting system to inform public policy decision making then we can continue to make improvements to the architecture, methodologies and data inventories to support such a holistic accounting effort.

The non-profit group *GPI Atlantic*, headed by Professor Ron Colman in Nova Scotia is making an important contribution to the advancement of methodologies for accounting for the economic and qualitative state of some 20 social, human and natural capital parameters (some of which come from the original ISEW/GPI work). Colman, and his multi-disciplinary team, are the Canadian pioneers and hope to apply their GPI accounting work to Nova Scotia and eventually the rest of Canada. Their work is supported by Statistics Canada with in-kind benefits of statistical data and methodological advice.

In my work at the Pembina Institute for Appropriate Development, we are advancing a new framework for accounting for the sustainable progress of human, social, natural and built capital for provinces and Canada along the lines of how businesses keep balance sheets and income statements to manage their cash flow and assets. Building from the US GPI work and based on experience with the development of performance measurement systems for Alberta (Alberta Treasury and Alberta Environment), I along with my Green Economics team are developing new and practical systems for

measuring sustainable progress for Yukon and Alberta, as prototypes using a balance sheet and income statement approach (see section 8).

One of the greatest challenges with a GPI/ISEW accounting system is the problem of selection bias. Any performance indicator exercise is faced with the same challenge of determining which indicators should be included or excluded from the quality of life accounting system. The decision to include or exclude certain indicators and the decision to derive a composite welfare bottom-line are difficult ones. The key is transparency and flexibility of the account. The greatest criticism of GPI may be that its components and their economic valuation are based on a set of held values, principles, and possibly moral ethics. The challenge in future GPI/ISEW accounting will be the ability of constructing accounts that are consistent with the held values, principles, and ethical foundations of a community or society. The ultimate utility of such measurement efforts is that the information provides evidence of trends in the welfare of society.

Some of the areas for improvement in the GPI accounting framework include:

Human capital - the GPI does not include net changes in the stock of human capital (human capacities and skills -- intellectual capital) as part of the investment required to sustain economic well-being. While difficult to measure, such measures of human capital, such as the effects/outcomes of education, new technologies, and media influences in enhancing or diminishing these or in rendering them obsolete could be explored.

Technology – The GPI does not exclude public and private spending on research and development nor does the GPI adjust investment requirements for changes in productivity. The impact and economic benefits of technological innovations on economic welfare (productivity and resource efficiencies) could be factored into future GPI accounts. This would compliment estimates of estimates of the value and depreciation cost of household capital, including some estimate of the cost of unnecessary built-in obsolescence in consumer and household capital goods.

Government Spending – The GPI considers only household or consumer spending as its fundamental building block, treating certain expenditures such as current spending by governments as intermediate assuming they generate no current welfare. In particular categories of the GPI, private spending on health and education are included while public spending is ignored. The exclusion of public spending on recreation, culture, social infrastructure, health and education on the basis that they do not contribute to the economic welfare of society is difficult to defend either empirically or politically. Government spending on research and development should also factor into future GPI accounting initiatives.

Social Infrastructure - the impact on community cohesion and the capacity for local self-help, of such things as the destruction of traditional Main Streets by shopping malls, and of locally-owned businesses by national chains. Conversely, the gain in such cohesion from such things as new developments based upon the traditional village model.

Natural capital and environmental accounts – The GPI does not include nonrenewable metallic and non-metallic minerals or the stock of total forest resources and fisheries. While the GPI does some form of natural capital accounts for farmland, "old-growth" forests, nonrenewable energy, air quality, water quality, and ozone depletion the entire structure of nonrenewable/renewable resource accounts and environmental quality accounts could be improved. Possible accounting frameworks include the United Nation's *Integrated Environmental and Economic Accounting Operational Manual* for construction of resource and environmental accounts. Furthermore, the recent *Nature's Numbers: Expanding the National Economic Accounts to Include the Environment* report by the U.S. National Research Council (1999) offers both hope and guidance for the construction of both natural resource/environmental

accounts but also embraces the ideas of a GPI accounting framework to include human and social capital. Statistics Canada's *Econnections* (1996) system of natural resource accounts for Canada also provide instructive guidance. Such accounts would include the development of stock, flow and monetary accounts for subsoil assets (oil, gas, coal and minerals), renewable resources (forests, water) and environmental services (air, carbon, biodiversity).

Ecological Carrying Capacity – the physical carrying capacity of ecosystems to sustain natural resource material flows and serve as sinks for pollution needs to be incorporated in a meaningful way. The use of the ecological footprint (developed by Mathis Wackernagel and Bill Rees), the living planet index (World Wildlife Fund) and material flow accounting (by Dan Tunstall and Eric Rodenburg, World Resources Institute) may hold some promise for inclusion in the GPI. The GPI Atlantic initiative headed by Prof. Ron Coleman has suggested inclusion of the ecological footprint (developed by Mathis Wackernagel and Bill Rees) into a GPI framework as a measure a nation's or regions appropriate or consumption of nature's ecological carrying capacity. While intuitively attractive, the ecological footprint does have room for improvement, both conceptually and methodologically. Any footprint analysis should also be reconciled with a robust set of natural resource and environmental quality accounts, once constructed.

Genetic Diversity - the impact on long-term well-being of the shrinking of the gene pool, through industrial genetic monocultures and "terminator" technologies, and the systematic eradication of species.

Water Projects - the impact of dams and water diversion projects on the noncommercial value of fisheries, forests, communities, and other assets.

Workplace Environment - the effects on well-being of the non-monetized benefits and hardships associated with the workplace.

Underground Economy - the monetary value of products and services exchanged through barter, or through unreported or illegal transactions

Pollution and Lifestyle-Induced Disease - medical costs arising from diseases such as coronary problems, cancers and stress, which are themselves, products of the economy.

8. A New Architecture: Benefit, Cost, Capital and Quantitative Accounts

Herman Daly (1996) has advocated the adoption of three accounts that could replace the current GNP/GDP account: benefit, cost and capital accounts. We support Daly's model as intuitively attractive and consistent with generally accepted accounting practices. The first step towards devising a new system of well-being accounts is to develop a total capital account for the nation, providing an inventory of the stock and flow of physical and qualitative dimensions of the nation's "capital" (including produced/manufactured, natural, environmental/ecosystem, social and human capital). In addition, such a total capital account would contain estimates of the "value" of the inventory and the rate and cost of depreciation. Prudent management of a household, business or nation necessitates such accounting. The evidence that such accounts would reveal would provide a more honest national wealth balance sheet that is necessary to manage effectively the well-being of the nation.

Secondly, a benefit and cost account would be necessary. The benefit account would measure the value of services that are derived or realized from the accumulation of all forms of capital (as Daly notes, "not just those rented during the accounting period, but also those used in production that is enjoyable and self-fulfilling). The cost account would measure the value of depreciation of produced, social, human, environmental and social capital, specifically the cost of depletion, pollution and "disutility of those kinds of labor that are irksome (Daly, 1996). As Daly notes, with both a benefit and cost account we could occasionally ask what the extra benefits or costs of further accumulation of capital or the depletion of capital to fuel growth were worth the extra costs.

Such accounting would bring us closer to the common sense management that most of us would adopt in managing our households, if not in the same language we have used to describe such a system of accounts.

Most recently I have helped develop for the Pembina Institute for Appropriate Development a sustainable progress accounting framework for Yukon that would measure the well-being and sustainability of the economy, community and environment. The framework is developed using traditional balance sheet and income framework used by firms and accountants. If we were to account for total living and produced capital using the traditional accountants framework such an account may look as follows:

Sustainable Progress Income Statement (SPI)

Benefits

GDP - Gross Domestic Product (expenditure-based[1], at market prices):

- Personal Consumer Expenditures
- Government Expenditures
  - Intermediate Expenditures/Investment in Human , Social and Environmental Well-Being and Capital
- Government Investment in Fixed Capital
- Business Investment in Fixed Capital
- Business Investment in Inventories
- Exports less Imports of Goods and Services

Unaccounted Benefits

- Value of Unpaid Work
  - Volunteerism
  - Parenting and Eldercare
  - Subsistence Living
- Value of Services from Public Infrastructure
- Value of Services from Consumer, Household, and Business Durables
- Value of Ecosystem Services
  - Forests
  - Peatlands
  - Wetlands
  - Carbon Sequestration

Costs

Expenditures (regrettable)

- Cost of Crime (expenditures)
- Cost of Substance Abuse (Drugs, Alcohol)
- Cost of Gambling
- Cost of Family Violence and Breakdown
- Cost of Auto Accidents (expenditures)
- Public and Private Environmental Clean-up Costs
- Cost of Toxic Waste Management
- Cost of Household Waste Management
- Personal (household) and Business Pollution Control Costs

[1] May also consider a Sustainable Income Account on an income-based GDP basis to highlight the breakdown of sources of income contributing to Yukon GDP.

Depreciation/degradation costs

- 'Cost' of Income Inequality (GINI Coefficient)
- Depreciation Cost of Public Infrastructure
- Depreciation Cost of Consumer, Household, and Business Durables
- Value of Loss of Leisure Time
- Depreciation Cost of Nonrenewable Resource Use
- Cost of Long-term Environmental Damage From Fossil Fuel Use
- Cost of Unsustainable Forest Resource Use
- Cost of Loss of Farmland
- Cost of Loss of Wetlands
- Cost of Loss of Wildlife and Fisheries
- Cost of Ecosystem Service Losses
- Cost of Air Pollution
- Cost of Water Pollution
- Cost of Ozone Depletion
- Change in Net Financial Position (external debt)

= Net Sustainable income (GPI)

Each of the respective benefit and cost (regrettable expenditure/depreciation) items could also be categorized along "triple bottom lines" for economic, social, and environmental.

Another consideration may be the development of "triple bottom line" balance sheet that would account for the total wealth of a nation, region or community, including its natural (environmental), human, social (human, community) and produced (manufactured) capital. These accounts would reveal assets, expressed in terms of both physical stocks (physical quantities or qualitative state), less depreciation/degradation, as well as their market value. Liabilities might also be identified, though determination may be problematic, particularly if expressed in physical/qualitative terms. The following is a conceptual framework for a total capital balance sheet:

Sustainable Progress Capital Balance Sheet

Assets (net of depreciation)

Natural capital
- Renewable resources
  - Forests
  - Agriculture
  - Wildlife and Fisheries
  - Water
  - Air
- Nonrenewable Resources
  - Oil and Gas
  - Minerals
- Ecosystem Functions
  - Carbon Sequestration

Human Capital
- Health
- Education

Social Capital
- Social Institutions
- Political Processes

Produced Capital
- Real Estate
- Consumer Durables
- Plant and Equipment
- Infrastructure (Public and Private)

Liabilities

Environmental
- Ecological Footprint
- Industrial Footprint
- Toxic waste stocks

Human-Social
- Income Inequality

Produced Capital

Financial
- Debt

Net Worth

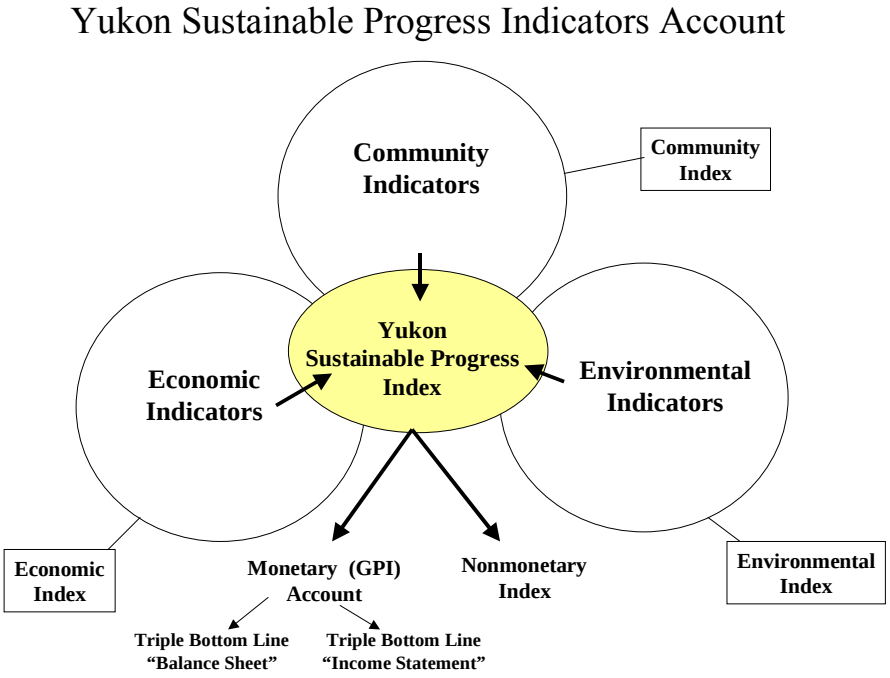
(shareholders equity)
- Distribution of wealth (assets)
- Distribution of income

Both the Sustainable Progress Income Statement (SPI) and the Sustainable Progress Balance Sheet (SPBS) would be a unique approach to accounting for oikonomia and sustainability of living capital. Accounts could be constructed both from a monetary values and physical-qualitative stock-flow accounting perspective, just as some resource companies maintain physical inventory accounts along with market valuation of their inventories. While the GPI accounts are under development in the U.S., Nova Scotia, Australia, and as the ISEW (Index for Sustainable Economic Welfare) in Europe and B.C., no jurisdiction to date has developed such comprehensive capital balance sheets. Such accounts also appear to differ from the approach of total wealth accounts being developed by World Bank economists (World Bank, 1999), where such natural, human, and build capital accounts are developed. While I support the development of natural capital accounts along the lines proposed, I raise concern with the estimation of human capital values as a residual of the GDP less natural and produced capital.

A comprehensive accounting architecture that would embody both qualitative Sustainable Progress Indicators, as well as the information required to derive the Sustainable Income Statement (GPI) and Total Capital Balance Sheet would result. A set of physical/qualitative non-monetary accounts combined with the monetary accounts would result for each of the three themes: economy, community and environment. Composite indices, for the non-monetary SPI indicators for each of the themes could

be derived for each of the theme accounts or a composite Sustainable Progress Index could be calculated by aggregating indicators from all three themes.

Figure 5



9. Making Money, Growing Poor

The second part of this paper concerns itself with exploring the relationship between what atomic chemist and economist Frederick Soddy (1926) called "virtual wealth" (money, debt, stock markets) and what David Korten (1999) calls "living capital" (human, social, natural capital). Using evidence from the GPI and other indicators of social, environmental and economic well-being we provide various pictures of how divorced the world of chrematistics has become from the real world of oikonomia.

10. Frederick Soddy: Nobel Laureate, Atomic Chemist, Monetary Reformist

Introduction to this subject is not without some foundation in redisovering voices from the past who long ago identified that a disconnect between chremastics and oikonomia would lead to the erosion of well-being for citizens of all nations.Thanks to economist Herman Daly (1996), the important work of Frederick Soddy in the area of atmoic chemistry and economics has been ressurected. Frederick Soddy (1876-1956) is best known for his collaboration with the Canadian Rutherford for the discovery the existence of isotopes and a major contributor to the modern theory of atomic structure. In 1921 he shared the Nobel Prize with Rutherford for his work on isotopes and radioactive decay. Less known is his work in the field of economics and the exploration of the nature of money (chrematistics) affects real wealth. Soddy unforrtunately was writen off as a crank by most economists and his chemistry peers lamented his focus of 20 years on monetary reform issues. Yet, Soddy, it would appear was a rarity understanding the micro details of the atom as well as understanding how the creation of money affects all economics. Soddy believe that economists and bankers bore a far greater burden of guilt for their misuse (obfuscation) of knowledge and that the world's real problem was faulty economics, not faulty science or chemistry. Soddy also understood early on the awesome power of atomic energy well before others. He also understood the awesome power of money and its creation over the real world of oikonomia.

In 1934 he wrote in *Virtual Wealth*;

"Since, in all monetary civilizations, it is money that alone can affect the exchange of wealth and the continuous flow of goods and services throughout the nation, Money has become the life-blood of the community and for each individual a veritable license to live at all. It is the primary and infinitely most important source of all our present social and international unrest and for the failure, hitherto, of democracy.

Whatever further social changes experience may dictate, no unbiased inquirer into the subject of money today can long escape the conclusion that until the system is drastically transformed and its mistakes eliminated, there can be no hope of peace, honesty, or stability again in this world… It is necessary in this respect to return to the fundamental basis of Money as something no private person should be allowed to create for himself. All, equally, should have to give up for Money the equivalent value in goods and services before they can obtain it…."

To Soddy saw orthodox economics as a pseudoscience in need of a totally new beginning that would align itself with the physical laws and to create conditions for science that would lead to genuine and sustained improvement in the well-being of all nations.

In his exploration of micro economic nature of money and how it affects the real wealth of the world, he uncovered what he considered to be a terrible beauty. He saw in his time that the power of money and over money creation was a far greater threat to peace and genuine well-being for citizens of every nation than the yet to be unleashed power of atomic energy. He noted that we must recognize the fundamental dualism of the material and the spiritual and resist "monistic obsessions" (Soddy, 1922, p. 6)

Soddy understood that *The essential feature of money is that it is a legal claim to wealth over and above the wealth in existence, all of which is an individualistic society is already in the ownership of others independently of this claim (Virtual Wealth, 1934: 40).* Soddy had identified the fundamental truism about a chrematistic money world, including orthodox economics, which represented a perpetual motion machine of making money out of nothing for a claim against something of real value. The creation (production) of money Soddy understood was not unlike the alchemist dream or akin to the miracle of the multiplication of the loves and fishes.

Soddy was speaking primarily here of the creation of money in parallel with debt where a growing mountain of debt (piled high through fractional reserve banking and compounded interest) laid a claim against living capital of the community or households whilst redistributing the power and ownership of real wealth into the hands of those controlling the money machine levers. Soddy understood that money created in parallel with debt (e.g. loans and government bonds) represents a claim against the living capital or wealth (human labor and natural resources (land) of the community. In a debt-based economy and financial system, the debt can only be repaid through the appropriation of human capital (labour and time) and the conversion of natural capital for sale in the market to service the perpetual growth of a mountain of debt. We will examine this evidence later in the paper. As a scientist and student of the laws of thermodynamics, Soddy understood this debt-based system of money creation *ex nihilio* ('out of noting') divorced from oikonomia (the physical realities and well-being of the community) would lead to the ultimate in *reductio ad absurdum* where the making of money would become the focus of society. In many ways Soddy was foreshadowing our world in 2000 where the primary focus of economics is on matters related to the market and making of money.

Soddy saw money as the nothing you get for something before you can get anything. Soddy was explaining the nature of money creation through fractional reserve banking where private banks are the primary source of money creation, the blood flow of an economy. Banks are the primary creators of all liquidity (blood) in the body of the economy whereby each time a loan is created brand new money is created.

What most people do not understand is the nature of this money creation process and how it affects the economy and in fact requires perpetual economic output by firms and consumption by households in order to pay for the burden of debt that grows without seeming limits, as per chrematistics. We live in a world where short-term financial gains are the norm, take for example the irrational exuberance (Greenspan) of US stock markets, tech stocks and the massive growth in margin debt fueled by a insatiable demand by day-traders. Indeed our world; is very much a celebration of chrematistics, the making of money, manipulation of real wealth for short-term profit and the transfer of purchasing power and ownership of real wealth into the hands of a few to the detriment of all citizens in community.

Was Soddy prophetic in his prediction that this money world would lead to greater destruction of the real wealth than the power unleashed through atomic energy? Was Soddy shining light on the real source and power behind Adam Smith's "invisible hand" that guides the market, economy and real wealth management through the exercise of the money power? Perhaps. If there is an invisible hand that guides our economic existence, as Adam Smith suggested, it just might be the omnipotent power of money and those who maintain the levers of control over the creation of the lifeblood of nations.

Today voices like Harvey Cox in "The Market as God" (Atlantic Monthly, March 1999) point out that "the market is becoming more like the Yahweh of the Old Testament … the only true God" and omnipotent in defining was is real and what is value. Cox notes "the market means that there is no conceivable limit to its inexorable ability to convert creation into commodities."

Jane Jacobs author of "*The Nature of Economies*" attempts to define money, as nature would see it. She writes "*nature says money is a feedback-carrying medium ...money is useful to economic self-regulation in the process we've come to call negative feedback control. But the usefulness of money is far from enough to explain how economies work*." Yet Jacobs like others, including most economists and financial experts, seem to be ignorant of Money, as a human invention, is created in our economic system and how, like the blood in our bodies, impacts our economic existence.

John Kutyn, former Canadian banker explains that "*A financial system is not a natural system. It is a creation of man's intelligence, and while not having any physical limitations, is subject to the laws of mathematics best shown by the accounting models that it adheres to. The money system is totally separate from the natural economy of production, consumption, and asset accumulation, and is designed specifically to control the natural economy, and indeed would not exist except to do so*."

A seemingly impenetrable theology has emerged from economic orthodox castles of our global village. The market we are taught has a omnipotent wisdom that can help to define and mediate all values. Money we are taught is the perfect medium of exchange no matter what form of capital is being exchanged. Things that were once considered sacred, including land, seeds, and now human genes, are now considered for sale at a price. Such obfuscation fundamentally alters our relationship with the land and our neighbour, hardening our hearts to the seductive lure of money, profit and financial independence. Is it any wonder why that which makes life worthwhile is being obfuscated by virtual wealth and illusions of prosperity?

11. The Nature of Money and its Creation

This evidence presented clearly reveals the nature of money creation that Frederick Soddy describes as a perpetual motion machine, growing larger in girth every day without any apparent satiable limits. What do such enormous disconnects between reality and virtual wealth really mean? How do we make sense of it? Where does it leave us? Does it end?

If debt money is viewed as the primary asset in our economy, then who owns and controls the creation of debt money? In whose hands lays the balance of power and the power over all living capital? In whose hands lies both the power to create and destroy economic prosperity?

In the development of the US GPI several burning questions emerged. If the unit of measuring genuine progress is money or dollars then do dollars represent an accurate measure of the true value of human, social and environmental capital we are attempting to account for? As Herman Daly noted one of the great shortcomings of economics is to confuse wealth with debt and money. During my visit to Washington in October 1998 I quieried Herman Daly on the issue of money. What determines the value of the dollar and how is money created? What impact does money creation have on the economy, on economic growth and how does it relate to the state of living capital?

The process of money creation is one of the least understood concepts in our modern world. Ask most economists, business professors or their students as to how money is created and what impact it has on the economy, and many will acknowledge they no very little about either the macro or micro economic nature of money. Economist John Kenneth Galbraith in his book Money:Whence It Came, Where it Went (1975) noted "*The process by which banks create Money is so simple the mind is repelled. Where something so important is involved, a deeper mystery seems only decent."*

The British organization the Social Credit Secretariat (1998) note:

"*Much misunderstanding surrounds the "Money Mechanism": how and by whom the Money supply is created; what conditions are attached to its creation; how it is injected into the economy; why the total Money supply is periodically expanded so that the economy may grow, and why it is periodically contracted with a corresponding contraction of economic activity. Yet it is the common critical factor in virtually every major socio-economic problem that afflicts the world's peoples today. The Money mechanism is the major factor in the "economic cycle" and periodic unemployment. It drives the underlying rising trend in technological unemployment. It ensures a continuing commitment to long-term exponential "economic" growth with its related damage to the global environment. And it leads inevitably to escalating, and eventually unrepayable, international debt. It is increasingly important therefore, that the operation of the Money system and its socio-economic implications be much more widely understood, not least by those in the voluntary sector who are attempting to ameliorate one or more of the problems it causes."*

Even bankers have admitted to the magic of banking and money creation. The Rt. Hon. Reginald McKenna, former Chancellor of the Exchequer and former chairman of the Midland Bank noted: "*I am afraid that the ordinary citizen would not like to be told that banks or the Bank of England, can create and destroy Money. The amount of Money in existence varies only with the action of the banks in increasing and decreasing deposits and bank purchases. Every loan, overdraft or bank purchase creates a deposit and every repayment of a loan, overdraft or bank sale destroys a deposit*."[10]

The fact that each time banks make a loan (mortgage, car loan, student loan, business loan) they create brand new money *ex nhilio* (without support of another's deposit) that circulates in the economy is perhaps new to some but not to many bankers. Graham Towers, former Governor of the Bank of Canada noted in the 1940s that *"Each and every time a bank makes a loan, new bank credit is created – new deposits – brand new Money."*[11]

At the same time each time a loan is repaid money is destroyed or taking out of circulation in the debt-based money system thus reducing the blood flow to the economy.

Virtually every aspect of the health of our economic system is governed by amount of money created through the fractional reserve banking system, where the majority of new money is created in the form of debt by private banks. Robert Hemphill, an eminent British banker once stated, "*This is a staggering thought. We are completely dependent upon the commercial banks. Someone has to borrow every dollar we have in circulation, cash or credit. If the banks create ample synthetic money, we are prosperous, if not, we starve. We are absolutely without a permanent monetary system*."[12].

The vast majority of money supply comes in the form of debt: mortgages, government debt (bonds), commercial debt, margin debt (borrowing against equity capital gains) and individual debt (credit cards) and represents a claim against the real wealth of the community and nature.

While reserve requirements had been put in place after World War II to limit the amount of new money private banks could create *ex nihilo*, these requirements were eliminated in Canada in 1991 by an amendment to the Bank of Canada Act and are have been reduced to 0% on savings accounts in the US and 3% on chequing accounts (with a proposal before Congress to eliminate even the chequing account reserve requirements). This means that the power of private banks over money creation is now virtually unlimited.

Today there are basically two types of money, government created, debt-free notes (currency and coins) and deposits in banks, created through loans. Over 98% of money in the US and Canada is now in the form of debt. This debt was created consumer and business loans (mortgages, car loans) as well as the issuance by government of debt through the sale of government bonds.

John Kutyn (2000), a former Canadian banker explains that government-created money (legal tender, notes, currency): "*are not credit money. They are pieces of paper on which the government places its stamp making them "legal tender". They are not redeemable, nor do they have to be paid back. They continue to exist and circulate throughout the economy. Again, these can be created in unlimited amounts simply by printing another note, which themselves can have as many zeros at the end as the government may desire. However, because they are created on a piece of paper, they affect the economy in a very different way than money that is created through the creation of a loan. A government note once created and injected into the economy has a one-time effect when it increases the quantity of money. When a new loan is given and money created through the banking system, it too causes an increase in the money supply. However, since loans require the payment of interest and principle, they also act to contract the money supply. It is important to note that the creation of money, whether through the printing of government notes or through the creation of a loan is totally outside of the operating economy (though it can have a very significant effect on the economy). The manufacture of a car or production of wheat does not create money. Today, almost all money is created through the creation of loans (very little of what we call money is in the form of government notes). With similar reasoning, the payment of interest or principle on a loan can only be made with money, and in the process destroys or reduces money by the amount paid. Again it is not the manufacture of a car or production of wheat that repays a loan, only money can do this.*

"*Whenever, a new loan is given, new money is created, the result is offsetting paper entries on a banks financial statement. Both deposits and loans increase by equal amounts. Similarly, money is destroyed whenever loans are repaid. Deposits and loans decreasing by an equal amount. In theory, there is no limit to the amount of money that can be created or destroyed. When money is allowed to be created through the banking system, it has various significant consequences. It must be recognized that deposits and loans only represent bookkeeping entries. As such, when a bank charges interest on a new loan, it is receiving income on a bookkeeping entry that it created out of nothing. Thus over time, it oversees the transfer of wealth to the bankers of the world. Of special significance, are bank loans to the governments. Money is whatever governments define it to be, and when governments desire to spend more than they receive, the shortfall could be covered by printing notes or by borrowing from the banks. Both methods involve creating money out of nothing. However, borrowing money through the banks makes the governments dependant on the bankers while over time transferring wealth from the taxpayers to the bankers to pay the interest on these loans that were created out of nothing. Today, this interest represents a large percentage of all taxes collected, with most tax departments now representing a collection agency for world bankers. In this regard, it must be noted that while we can use mathematics and logical reasoning to show the errors of Keynesian economic theory, it is Keynesian theory that provided the theoretical and moral justification for the massive increase in government debts this century. This has allowed bankers to exert significant influence over governments, while transferring trillions of dollars from taxpayers to bankers to pay the interest on these loans. Has all of this happened because of an innocent error?"*

We must have a clear understanding of what actually happens when a new loan is created. Many people are under the mistaken belief that a bank is lending some of the money that it holds as deposits. This is not what happens. When a new loan is created, a bank completes two bookkeeping entries. It credits the borrowers account with the amount of the loan, and it creates a loan account of an equal amount. The effect on the bank's balance sheet is that total deposits have increased by the amount of the loan, and the banks total loans have increased by the amount of the loan. Since we are talking of the creation of two equal and offsetting accounting entries, it does not matter how small or how large these numbers are, hence the concept of an unlimited supply of credit. No matter how large the loan created, the bank's balance sheet will remain balanced. Are there any practical limits to credit growth? However, that banks can create an unlimited amount of loans and money is an accounting truism. Consider for a moment

loans involved in the Yen-carry trade. Here, loans are created in Yen within the Japanese banking system. A borrowers account is credited with Yen, and an equal loan account is created, on which the borrower pays a very low rate of interest. These Yen are then sold for U.S. dollars and invested in the U.S. bond market earning 6% or the U.S. stock market earning 20%. These loans were created in such massive amounts since 1995 that they drove up the value of the U.S. dollar in spite of large trade imbalances. Money from nothing in the truest sense of the word."

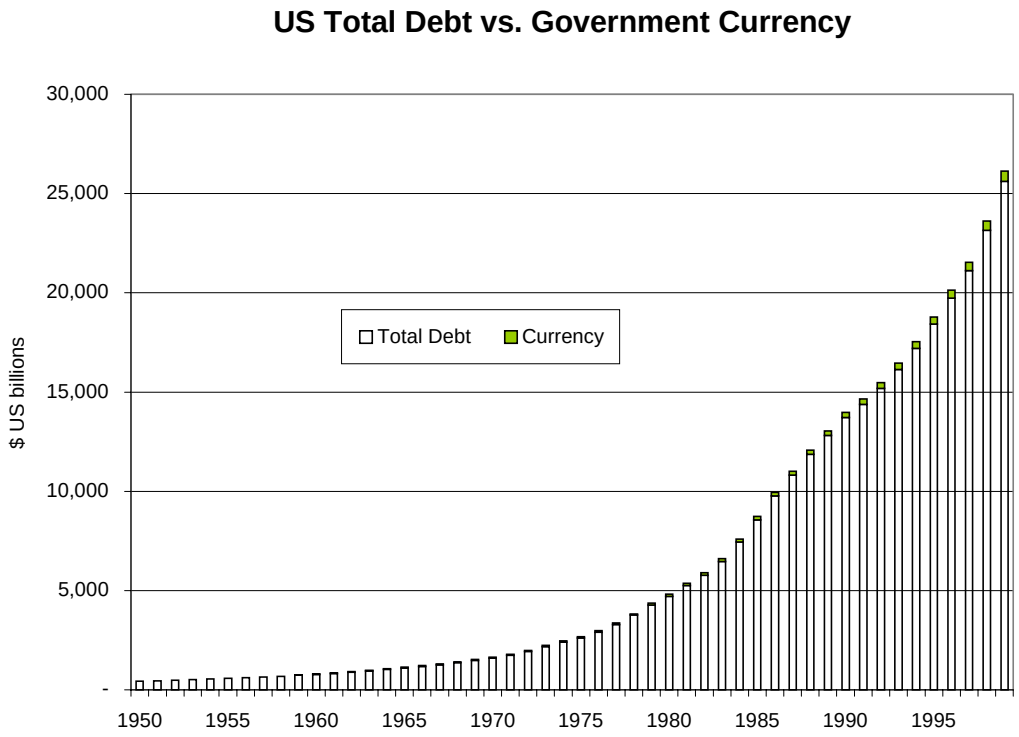
David Korten (1999, 0. 34) elaborates further on the nature of mortgages (the word "mort-gage" comes from the French meaning "death-pledge' or "death grip" (Rowbotham, 1998):

"Say a bank provides me with a $100,000 mortgage. It opens an account in my name and credits it with the amount of my loan. In so doing it creates $100,000 that I then spend into circulation. So far, so good. The catch is this: the bank expects to be repaid with interest, which on a long-term mortgage might require repayments of $200,000 or more. Because all the other money in circulation was also created through lending by banks that also expect to be paid back with interest, there simply isn't enough money in circulation to pay the banks their dues – unless the economy grows fast enough to expand borrowing a rate sufficient to create the money required to repay the principal and interest on previous loans. (The banks check of your credit worthiness is in fact your ability) of competing and winning against other players and if you fail in that game you lose your house or whatever other collateral you had to put up."

Evidence of this process of money creation through debt is best portrayed in a picture. The following graph shows a huge mountain of debt since 1950 in the US. Notice the small sliver that represents government notes (seignorage) that can be created at no cost to citizens while debt imposes an obligation to repay the principal plus interest on money created out of nothing to finance the purchase or production of something.

The total outstanding debt of the US (total credit market debt (domestic non-financial (federal government, state and local government, household, and business) and financial) has grown from $425 billion in 1950 to an astounding $25.6 trillion by the end of 1999 (Federal Reserve System, 1999). The majority of this credit market debt is owed by financial institutions ($7,606 billion), households ($6,466 billion, in mortgages and consumer debt), business ($5,986 billion), and federal, state and local governments ($4,932 billion). Foreign debt has also been rising and stands at $622 billion by end of 1999. Most troubling is the trend is the mounting debt by the financial sector and the soaring amount of margin debt. Margin debt has grown from a mere $1.4 billion 1950 to $278 billion by March 2000, an increase of 20,410% or increased 10 fold in the last 10 years of the US stock market bull run!

Figure 6



The mountain of US debt is in fact greater than the entire Third World nations ($2.5 trillion) combined. How can the richest and most economically powerful nation on earth be so indebted and to whom? These are complex issues but demand inquiry.

What is immediately apparent from the debt chart is that the mountain of debt never ceases growing reflecting the perpetual motion nature of money creation in parallel with debt and the "magic" of compounding interest. It is important to realize that because of the nature of the debt laying claim to real wealth, in excess of the physical supply of real wealth, means the debt effectively unrepayable. There is only one conclusion to this journey, the repudiation of all debt or the collapse of the entire oikonomia as the debt becomes impossible to repay.

The other thing that is hidden is the fact that government created, debt-free money in the form of currency has remained an insignificant and shrinking share of debt-money supply. In 1999 this fiat currency represented only 2% of total debt. While the government does have the power to create money without the costs incurred through debt-money creation it choices not to.

Some monetary reform economists (Committee on Monetary and Economic Reform) have been pointing out the dangers of our fractional reserve banking system for years. They point out that the Bank of Canada has abrogated its responsibility over a stable and sustainable monetary policy seemingly oblivious to the policies Graham Towers (former Governor during the Depression era) had adopted to help Canada emerge from World War II with a healthy and vibrant economy. Part of the problem COMER note in their Monetary Reform newsletters is that private banks are encouraged to load up on government debt (bonds) which the Bank for International Settlements (the central bankers "bank" in Basel, Switzerland) has deemed risk free. The interest paid on these bonds accrues to the shareholders of

private banks not to the citizens of Canada, in common. COMER points out, is that if the Bank of Canada, our central bank, purchased these government bonds, then the interest paid would return to all Canadians in the form of dividends (that is at no cost to Canadians) rather than as dividends to private bank shareholders. This would also eliminate the $42 billion obligation of interest payments on the federal debt, a mountain of debt that takes roughly $0.30 per dollar of tax paid by Canadians.

Some might suggest that the abrogation of responsibility of the central bank of Canada over the prudent stewardship of money is grounds for treason, a crime against the well-being of current and future generations of Canadians. Ed Mayo, Executive Director of the New Economics Foundation in the UK is more damming stating that "*today's money system boils down to institutionalized theft*"[13] The Bank of Canada has also deferred to private banks for the creation of money, while reducing their expansion of money supply through the issuance of fiat or government notes that would be backed by the real wealth and productivity of the nation.

David Korten (1999) in his book Post-Corporate World provides sums up this discussion best by noting that money is nothing but an illusionary storehouse of wealth since its very creation is literally out of nothing.

"Money is created out of nothing when a government prints a number on a piece of paper or a bank issues a loan and credits the amount to an account in its computers. It has no substance or inherent utility, and since President Nixon took the U.S. dollar off the gold standard in 1971, the governments and banks that create it no longer back it with anything of value."

"Think of a modern Money economy as comprised of two related subsystems. One creates wealth. It consists of factories, homes, farms, stores, transportation and communications facilities, the natural productive systems of the planet, and people going to work in factories, hospitals, schools, stores, restaurants, publishing houses, and elsewhere to produce the goods and services that sustain us. The other creates and distributes Money as a convenient mechanism for allocating wealth. In a healthy economy the Money system serves as dutiful servant of wealth creation, allocating real capital to productive investment and rewarding those who do productive work in relation to their contribution.

In a healthy economy, Money is not the dominant value, nor is it the sole or even dominant medium of exchange. Indeed, one of the most important indicators of economic health is the presence of an active economy of affection and reciprocity in which people do a great many useful things for one another with no expectation of financial gain. Such voluntary sharing creates and maintains the social fabric of trust and mutual caring of which the social capital of any healthy family, community, or society is comprised.

Pathology enters the economic system when Money becomes society's defining value and the primary currency of human exchange, grotesquely distorting public values and goals. Money, once convenient a means of facilitating commerce, comes to define the life purpose of individual and society. The human, social, and natural capital on which the well being of any society depends becomes subject to sacrifice on the altar of Moneymaking. And Money people prosper at the expense of working people. It is a social pathology called finance capitalism."

Yet despite such evidence and provocative statements, few economists and business analysts explore the issue of money and how it impacts our real lives and the economy. Along with the revision of the GDP and national income accounts, the reform of money is certainly the most important unfinished work for economics in the 21st Century that lies ahead.

12. The Money World and the Money Power.

Given that chrematistics is a study of political economy related to the manipulation of money, property and wealth for the short-term gain of those who own such property a discussion of the distribution of the money power is relevant though a tributary to this long journey of discover. A legitimate question arises: is money like some benevolent invisible hand or omnipotent power, or are there "directors" who manage the creation (and destruction) of money with intended outcomes? If money and the financial institutions are human creations or social constructs then there are presumably persons in charge of the money machine. Are there money "creators" whose power is so dominant that they effectively govern the oikonomia of the world? Or is money simply a token which we as individuals worship and give our power and life energy towards?

Abraham Lincoln, just days before his assassination in 1865 makes made reference to "the Money Power":

"Money will cease to be the master and become the servant of humanity. Democracy will rise superior to the Money power." (Senate document 23, p. 91, 1865). Jefferson also forewarned the American people against the Money Power stating

President Thomas Jefferson once remarked:

"If the American people ever allow the banks to control the issuance of their currency, first by inflation and then by deflation, the banks and corporations that grow up around them will deprive the people of all property until their children will wake up homeless on the continent their fathers occupied. The issuing power of Money should be taken from the banks and restored to Congress and the people to whom it belongs. I sincerely believe the banking institutions having the power of Money are more dangerous to liberty than standing armies."[14]

One of the most remarkable statements comes from British Lord Josiah Stamp, former director of the Bank of England:

"If you want to be slaves of the bankers, and pay the costs of your own slavery, then let the banks create Money. The modern banking system manufactures money out of nothing. The process is perhaps the most astounding piece of slight of hand that has ever been invented. Banking was conceived in iniquity and born in sin. Bankers own the earth; take it away from them, but leave them with the power to create credit, and with the stroke of a pen they will create enough money to buy it back again. … If you want to be slaves of the bankers, and pay the costs of your own slavery, then let the banks create money."[15]

Former Harvard Business professor and author David Korten (1999) provides a more contemporary perspective on the "institutions of money."

The money world consists of Money and the institutions of Money – primarily corporations, financial institutions, and those aspects of government that deal with the regulation, budgeting, and expenditure of Money. This world is purely a creation of the human mind and has no meaningful existence beyond the confines of our consciousness. Yet it too has its own logic, values, and imperatives for healthy function. Its institutions are designed to collapse unless there is sustained growth in profits, stock prices, output, consumption, trade, investment, and tax receipts. Its appetites are insatiable and it acknowledges no physical limits. Whatever exists today, more is required tomorrow. Everything—even life—has its price. An absence of growth is a sign of stagnation and even decline. Its song calls us with promises of ease,

personal power, and material prosperity; in return we must accept Money as the mediator of all values and dedicate our lives to its reproduction."

I have often wondered why these voices of the past and present have not been more resurrected in our modern media and news coverage. Why are so many people naive or unaware of how money is created and the impact it has on our economic system? Is this a form of mass amnesia or are the obfuscations and distractions intended to deflect any meaningful inquiry into such an important issue.

One might argue that in part we are all part of the money system and knowingly or unwittingly contribute to its worship. Most of us have incurred some form of debt in our lives -- a mortgage, car loan, student loan, credit card debt, or a business loan. Few us have been immune to the temptation that money and the power it holds for financial and economic freedom.

While it might be tempting to point fingers at bankers for the destruction and unaccounted human anxiety, even death, that has resulted from the money system and the money power, we need only examine our own consciences and behaviour as co-contributors to the perpetual motion machine of economic growth and the accumulation of financial, virtual wealth. Every time we take out a loan to finance a purchase or incur credit card debt we unwittingly enslave our neighbour, reduce our collective (purchasing) power, and trade our life energy for these *ex nihilo* tokens of real wealth feeding a system whose appetite is insatiable.

One thing is certain. No matter who holds the balance of money power in the world or each nation, the power over money creation (and destruction) is such that it holds court over all living capital , all possessions, all property and over life itself. Its power is so omnipotent that it may well be the "invisible hand" that guides markets referred to by Adam Smith. This paper is too brief to explore this subject further suffice to say that it requires a life-time of study to understand the nature of this money power and its operating manifesto.

13. Making Money, Whilst Eroding Living Capital

Besides effusive language of political economy, what evidence might we mount that would support the claim that the accumulation of virtual wealth comes at a significant price to the well-being of society? Using statistics and evidence of both virtual wealth (debt, stock market values), economic growth (GDP) and indicators of living capital (GPI, ISH, HDI and other indicators), we can begin to create new images that allow us to view the world as it truly is.

This is just the beginning of what I consider one of the most important inquiries for economics. We must attempt a full account of the costs, benefits and state of living capital (real wealth) in our economies and understand how the blood flow of the body of the economy (money) impacts these.

Simon Küznets (1965) pointed out that "*the welfare of a nation can scarcely be inferred from a measurement of national income as defined by the GDP…goals for 'more' growth should specify of what and for what*." Using the evidence from the 1998 US GPI account along with other indicators of well-being (UN HDI, Index for Social Health (ISH), and others) let us examine whether US households and nature are better off or worse off than they were, say in 1950. The following table presents this evidence along the lines of values. That is, what we might intuitively define as contributing to an improvement in quality of life or eroding our quality of life. Using the evidence from the 1999 update to the US GPI account, the United Nations Human Development Report 1999, Federal Reserve Board statistics and New York Stock Exchange statistics, we present a picture of changes in US well-being since 1950 (or another benchmark year, where applicable). The results are sobering.

Table 2: For Better or For Worse? **Are we better off or worse off compared to 1950?**			
	Are We Better off or Worse off than in 1950?	% Change in cost/value per capita since 1950 (or benchmark year)	% Qualitative Change
What we want more of?			
Longer life (life expectancy)	▲ Better	Up 8.5% since 1970	Average life expectancy has increased 6.0 years between 1970 and 1997.
More sustainable and genuine progress (GPI)	▲ ▼ Better/Worse?	Up 22% since 1950 but down 29% since 1978 peak	
Higher Quality of Life (UN Human Development Index and Index for Social Health, Miringoff)	▲ ▼ Better /Worse?	US HDI improved 7.2% between 1975 and 1999 while the ISH has declined 45% between 1970 and 1993.	
More economic growth (GDP)	▲ Better	Up 164% (1992 dollars) Up 1,529% in current dollars	
More US stock market growth (total stock market capitalization value)	▲ Better	Up 6,060% (current dollars)	
More personal consumption (expenditures)	▲ Better	Up 181%	
Higher quality and more durable household durables	▼ Worse	Down 245%	
More leisure and family time	▼ Worse	Down 1,428%	19% less leisure time per worker; 58% increase in hours of TV viewing per household.
More productive farm land	▼ Worse	Down 248%	
More volunteerism	▲ Better	Up 128%	169% increase in average hours volunteered per capita
More renewable energy use	▲ Better		3% of total energy consumption from less than $2/10^{th}$ of 1% in 1950.
What we want less of ?			
Less debt (total market credit)	▼ Worse	Up 3,262% (current dollars per capita)	20,410% increase in margin debt.
Less foreign borrowing	▼ Worse	Up 400% (since 1983, the peak of net foreign lending).	
Less inequality (income and wealth)	▼ Worse	Up 18% (since 1968 low)	70% of the rise in average family income between 1977 to 1989 went to the top 1 percent of the richest families (Krugman). By 1995 the riches 0.5% of families claimed 28% of net worth, almost as much as the bottom 90% of the population (32%) (Kennickell and Woodburn, Federal Reserve Board).
Less poverty	?		19% of US citizens still live in poverty (50% of median income) (United Nations)
Less family breakdown	▼ Worse	Up 121%	195% increase in number of divorces; 238% increase in number of kids impacted by divorce.
Less hours of work	▼ Worse		7% more hours worked per annum per worker.
Less commuting time	▼ Worse	Up 89%	30% increase in hours spent commuting to work.
Less underemployment	▼ Worse	Up 375%	125% increase in the number of constrained hours per worker
Less automobile accidents	▼ Worse	Up 200%	
Less depletion of nonrenewable resources	▼ Worse	Up 389%	14% increase in nonrenewable energy produced per capita from

			US sources
Less long-term environmental damage	▼ Worse	Up 142%	73% increase in barrels of oil equivalent of nonrenewable energy consumed per capita
No net loss of wetlands	▼ Worse	Up 358%	6% decrease in the area of total wetlands.
No net loss of old growth forests	▼ Worse	Up 6%	69% less old growth forest
Less ozone depletion	▼ Worse	Up 5,109%	9,247% increase in production (metric tons) of CFCs worldwide.
Less air pollution	▲ Better	Down 67%	42% improvement in ambient air quality; however, emissions of carbon monoxide are down 13%, nitrogen dioxide up 132%, VOC (volatile organic compounds) down 9%, sulphur dioxide down 15% and particulate matter up 83%.
Less water pollution	▼ Worse	Up 33%	
Less noise pollution	▼ Worse	Up 43%	
Overall Tally of Indicators **Better off: 7** **Worse off: 18** **Mixed Messages/Uncertain: 3**			
Sources: all figures are from the US 1998 Genuine Progress Indicator updated by Cobb, Goodman and Wackernagel (1999). Other sources as noted include the, UN Human Development Report 1999, Federal Reserve Board, New York Stock Exchange. Note: Figures in second column are expressed terms the percentage change from 1950 (or other benchmark year) to 1998 from the US 1998 GPI tables using figures expressed in 1992 chained dollars per capita. Figures in the third column are expressed in the quantitative units of measurement.			

The table reveals that for the most part the picture shows tremendous growth in virtual wealth (debt, stock markets), economic growth (GDP) whilst most indicators of household and environmental well-being have shown declines relative to 1950. Most remarkable has been in the increase in money assets with total market credit debt rising 3,262% (in current dollars per capita) since 1950, stock market values appreciating 6,060% (current dollars per capita) while GDP per capita (current dollars) rose 1,529% (or 164% in 1992 dollars). At the same virtually every indicator of social, human and natural capital has shown declines since 1950. The few exceptions are improving air quality, increased life expectancy, and more volunteerism. Environmental liabilities continue to mount, while the social fabric of households and communities appears to be fraying evidenced by rising income inequality (and inequality of wealth distribution), family breakdown (divorce), crime (US has one of the highest level of incarceration outside of Russia).

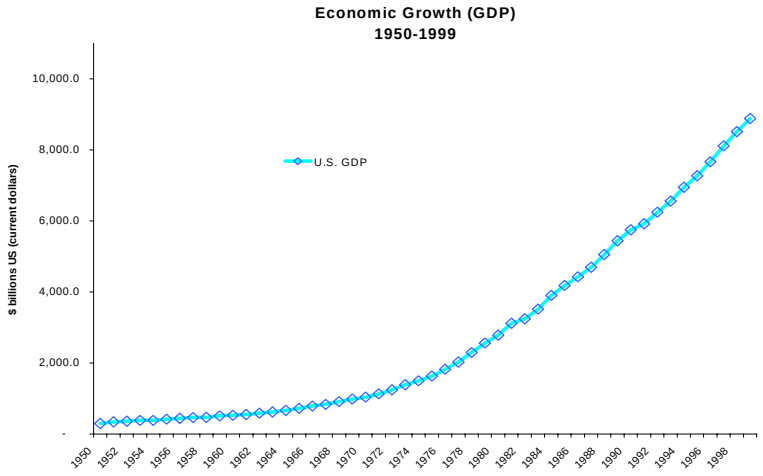
If one is a student of chrematistics one would celebrate the remarkable performance of virtual wealth growth and economic output. However, if one is a student of oikonomia and ecological well-being the picture is distressing. One could say that we are making more money while growing poorer in terms of living capital and in terms of how most people experience life.

David Korten (1999), author of *When Corporations Rule the World* and his latest book, *Post-Corporate World: Life After Capitalism* presents a fictitious line graph titled "making money, growing poor", suggesting divergence of financial wealth, economic output (GDP), net beneficial output (e.g. GPI), and living capital. Using Korten's illustration as a framework and applying real numbers yields some rather remarkable images of the growing disconnect between chrematistics and oikonomia. While financial wealth has risen dramatically since the 1950s the state of living capital has been declining no matter what metrics are used.

Our first image or picture in this exhibition is our traditional measure of economic growth or prosperity: the GDP (gross domestic product) (see figure 7). The following graphs show net output or the GDP of the US economy. Since 1950 the GDP has risen without a pause suggesting that we are

economically better off each progressive year, producing more goods and services and exchanging Money in those transactions. The GDP assures us that our aggregate national income has been rising; we are certainly exchanging more stuff for an increasing financial return.

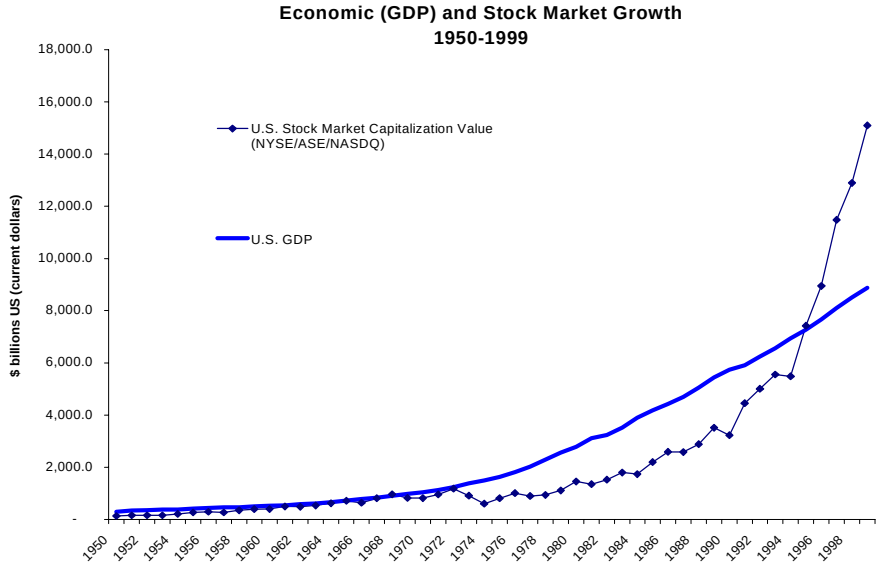
Figure 7



Since 1950 the US GDP has risen relentlessly from $295 billion in 1950 to $8.9 trillion by end of 1998. On a per capita basis (in current dollar terms) each US citizen's share of national income (GDP per capita) has increased 16.8 fold since 1950 from $1,935 per capita in 1950 to $32,500 per capita in 1998 (or in terms of real or deflated 1992 dollars from $10,584 per capita in 1950 to $27,939 per capita in 1998; a 2.6 fold increase).

The next picture adds the value of all stocks trading on US stock market exchanges (New York, American Stock Exchange, and NASDQ) reveals the following image (see figure 8)

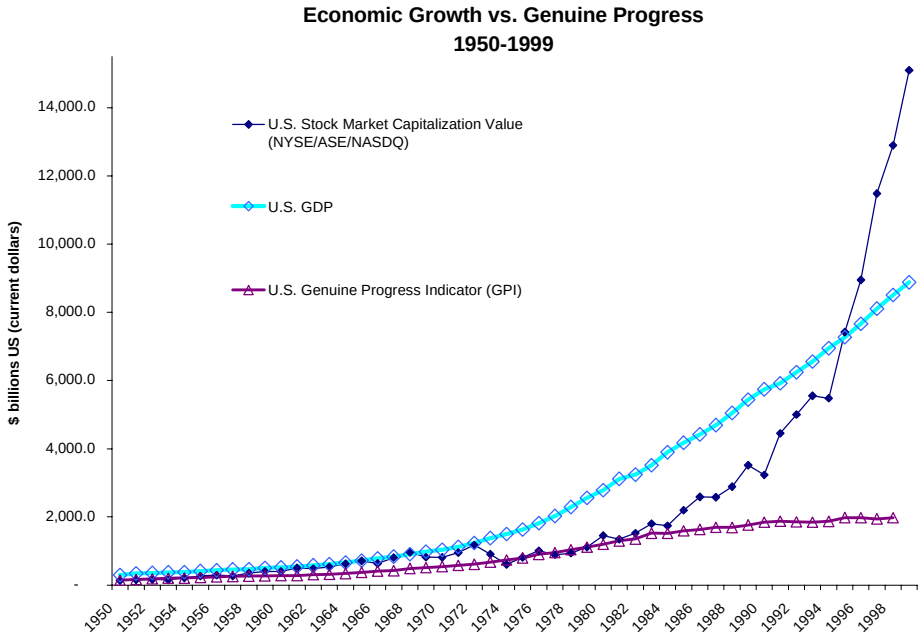
Figure 8



Since 1995 the value of stocks trading on US exchanges has been virtually parabolic actually exceeding the value of the entire output of the US economy (GDP). By December 1999 total US stocks were valued in excess of $15.1 trillion or over $55,000 per citizen compared to a 1998 GDP figure of $8.9 trillion or $32,500 per citizen. The values of stocks as a percentage of the GDP have risen from 46% in 1950 to 170% by 1998.

We then add a line equivalent for what David Korten calls "net beneficial output" which is synonymous to the GPI, in millions of dollars (see Figure 9). The following graph reveals a considerable gap between the gross economic output, the value of stock markets and the real economy (GPI). In 1998 the GPI was valued at $1.9 trillion or roughly $7,300 per citizen. The 1998 GPI value was only 13% of the US stock market values of 1999.

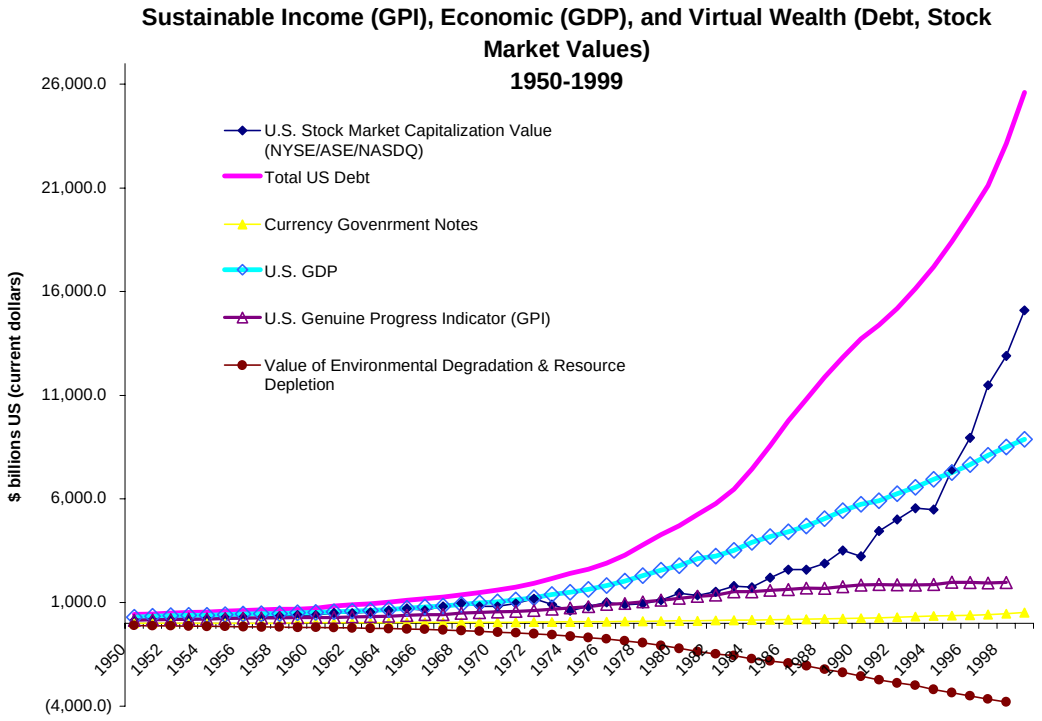
Figure 9



Finally we add total market credit debt, government currency (notes), and the costs of environmental degradation, including the depletion of natural capital such as oil, gas, forests, wetlands and farmland, from the US 1998 GPI account reveals a significant and growing gap between economic growth and stock market appreciation and environmental capital (see figure 10). The cost of environmental degradation has been increasing and by 1998 is estimated at $3.8 trillion.

The picture presented (see figure 10) is dramatic. The debt money line eclipses all other lines. By December 1999 the total US debt (government, household, business and financial sector) exceeded $25 trillion or almost $94,000 per citizen or $375,000 for a family of four! The results are shocking. Rarely would economists examine such a BIG PICTURE since it is assumed that debt is an asset, not a liability.

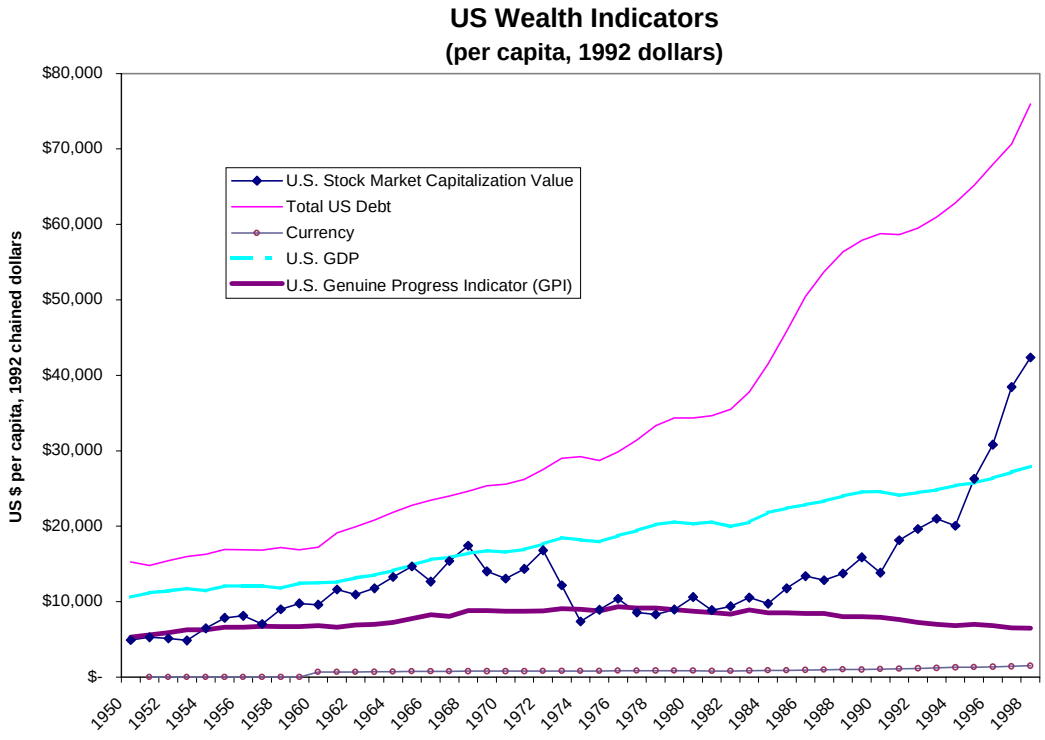
Figure 10



You will also notice a rather insignificant line that hovers close to the horizontal access. This is the amount of government-created currency (notes and coins) that is rather insignificant at $515 billion in 1999 or $1,890 per citizen, only 2% of the total outstanding debt.

Some might argue that the data should be shown on a per capita, constant dollars basis (though we would question the discounting of debt given that by definition an increase in debt is an increase or inflation in money supply). Figure 11 creates a similar image to Figure 10. The figure shows the downward trend in the US GPI since the mid 1970s while GDP and debt grow dramatically further disconnected from the real wealth and well-being of society.

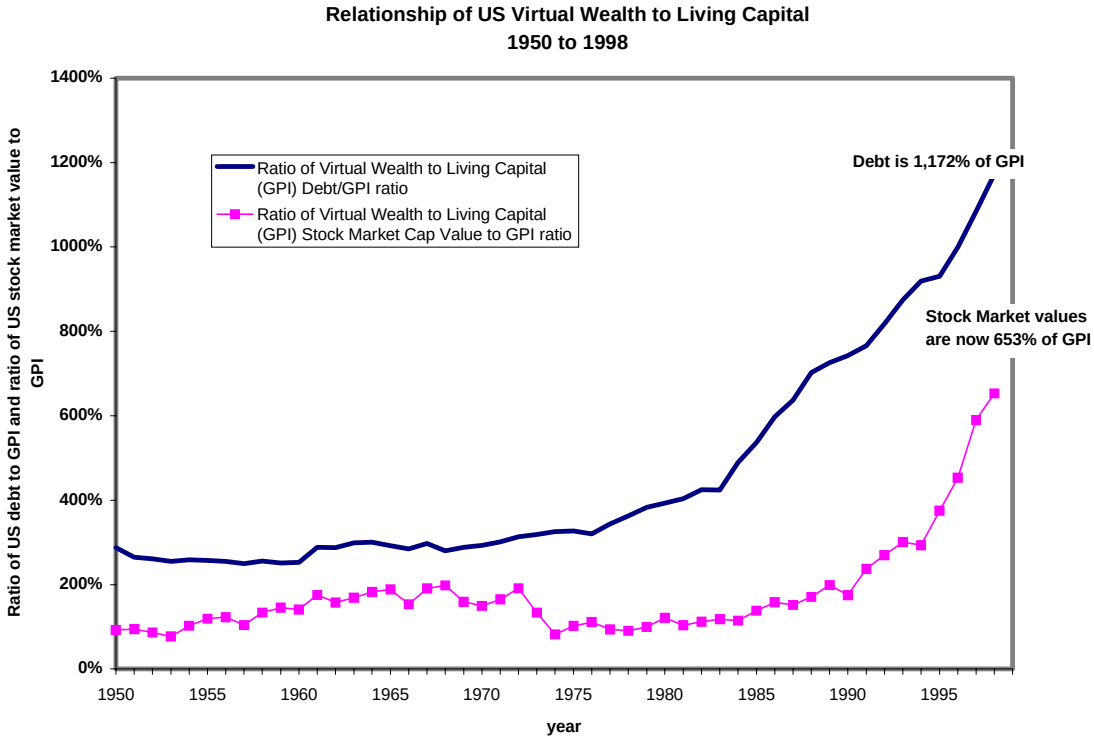
Figure 11



These graphs also reveal some interesting phenomenon, particularly the apparent relationship between the growth in debt-money and economic growth. As well, they reveal the disconnect between the real economy (as measured by the GPI) and virtual wealth.

The following graph (figure 12) summarizes the relationship of virtual wealth growth (debt and stock market values) and the real state of living capital (GPI). As of 1999 the US debt had risen to an astronomical 1,172% of the GPI value compared to 287% in 1950; US stock market values had risen to 653% of the GPI by 1999 compared to 92% in 1952.

Figure 12



Herman Daly notes that debt creation gives a growth bias to the economy: "As a result of fractional reserve banking over 90% of our Money supply is loaned into existence by commercial banks and thus [debt] must grow by enough to at least pay the interest on the loan by which it was created. **This gives a basic growth bias to the economy**. Fractional reserve banking also transfer from private hands the state's traditional right to issue Money, and does so in a way that increases the cyclical instability of the economy. The corrective call for 100% reserve requirements has been made periodically not only by so-called 'monetary cranks' (Frederick Soddy), but also by economists of impeccable reputation such as Frank Knight and Irving Fisher."[16] Herman Daly, co-author of For the Common Good

Herman Daly makes an important observation, that is that the creation of money, through debt, requires continuous economic growth. Because the outstanding debt is never repayable, the economy must continue to expand through increasing output in order to feed the insatiable appetite of debt-based money system. The debt system is analogous to a virus or cancer, which can eventually consume the host (living capital). Debt-based money is the lifeblood of the economy and the banking system is its heart. Without debt money expansion as the blood of the economic growth system, the entire system would collapse.

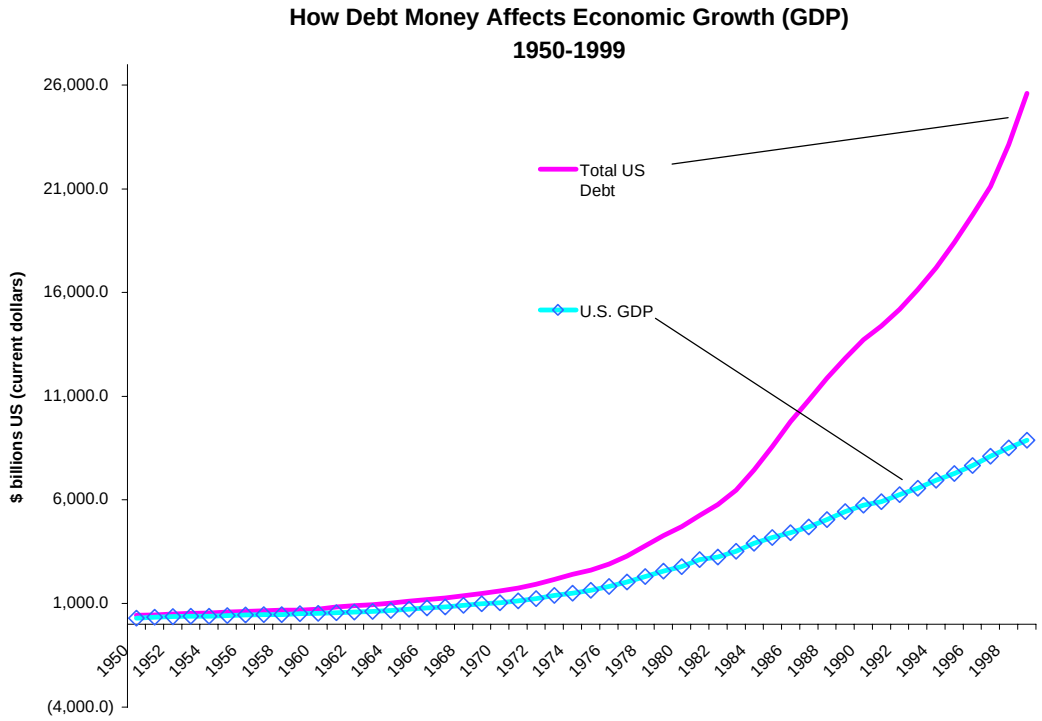
The debt system is like an elaborate pyramid scheme where those in control at the top of the pyramid feed off the life energy (labor) and natural capital assets of the masses (we the people) to sustain the life of the virtual wealth system. It is perhaps ironic that the Great Seal of the US, which appears on the US $1 bill, is a pyramid with the tip of the pyramid, a "benevolent" all-seeing eye, levitating over the base of the pyramid, with the Latin inscriptions.

The relationship between growing outstanding debt and economic growth is visually (see figure 13) as well as statistically evident. The total US debt grew in the 1990s at an average of 7% per annum

compared to GDP, which averaged a growth rate of 5% per annum. Stock markets expanded at an average of 19% per annum. In 1999 the total debt expanded by 11% compared with GDP growth of 4%.

The statistical relationship between debt and economic growth is also significant. Correlating GDP against debt yields an adjusted R-square of 0.9832 and t-stat of 52.187, a significant correlation. The same is true when stock market capitalization values are regressed against debt yielding an adjusted R-square of 0.8714. At the same time the relationship between debt growth and the cost of environmental degradation (drawn from the GPI) shows a significant negative relationship yielding an adjusted R-square of 0.9862 and t-sat of –58.6.

Figure 13



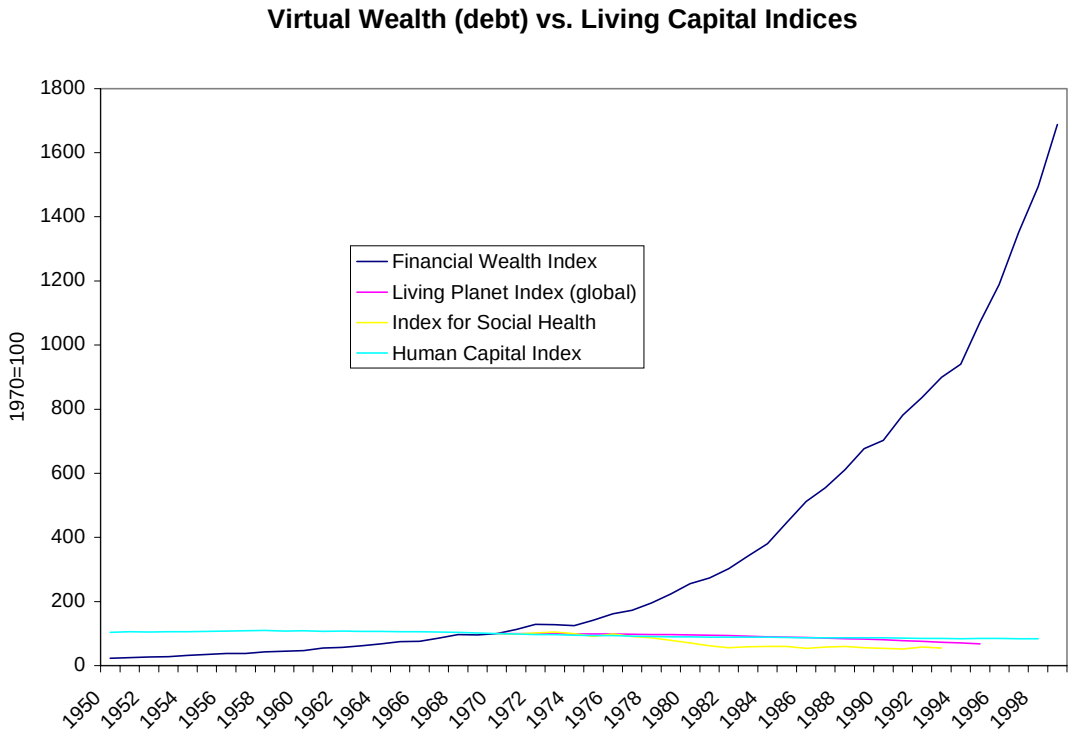
There is a great paradox at the heart of eternal economic growth, that is, that debt must continue to grow to sustain economic growth. Unless more debt is incurred, the blood flow to the economic system will cease at the economic engine dies. Since the debt can never be repaid from current production of goods and services, the system is like cancer, eventually consuming and killing the living system of its host. The only question is when the oxygen to the debt system becomes so restricted, due to the constraints imposed on living capital (human and natural) that the system begins to atrophy.

Further evidence presented is only in terms of monetary values. Expressing this relationship using qualitative indicators of well-being reveals an equally if not more dramatic disconnect. Virtual wealth statistics (stock market values, debt, GDP) are converted into non-monetary indices of "financial wealth" index using 1970 as the reference year. We then compare this financial wealth index with three indicators of living capital: the Index for Social Health (a composite index of 17 social health indicators), the Living Planet Index (composed of indicators of the health of forests and other ecosystems, developed by the World Wildlife Fund) and the Human Capital Index (a composite index derived of qualitative data from the US GPI account, including income inequality, loss of leisure time, hours worked per worker, divorce

and time spent commuting to work.

The results are as even more dramatic (see figure 14) than our monetary expression of the great disconnect. Since 1970 (100) the financial wealth index has reached stellar heights of 1,688 basis points by 1999 or 16.9 times its 1970 value. Meanwhile the ISH by 1993 had fallen by almost half, 55% of its 1970 level. The Living Planet Index[2] as of 1995 has fallen to 68% of its 1970 value while the Human Capital Index, as of 1998, has fallen to 84 % of its 1970 value. So as financial assets have shown torrid growth, real or living capital has been eroding.

Figure 14

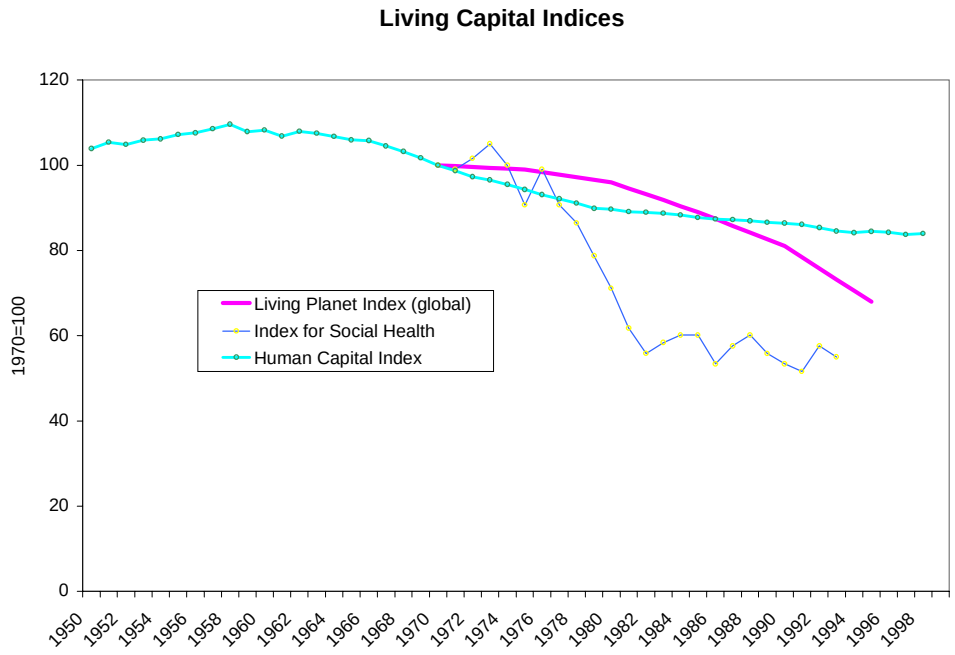


The application of the UN Human Development Index (HDI) for that US that yields only 5 data points 1975, 1980, 1985, 1990, and 1997 would suggest a rising quality of life in the US. The shortcomings of the HDI is that it includes only 4 variables (GDP per capita, life expectancy, literacy and educational attainment) versus the ISH which includes 17 social health indicators.

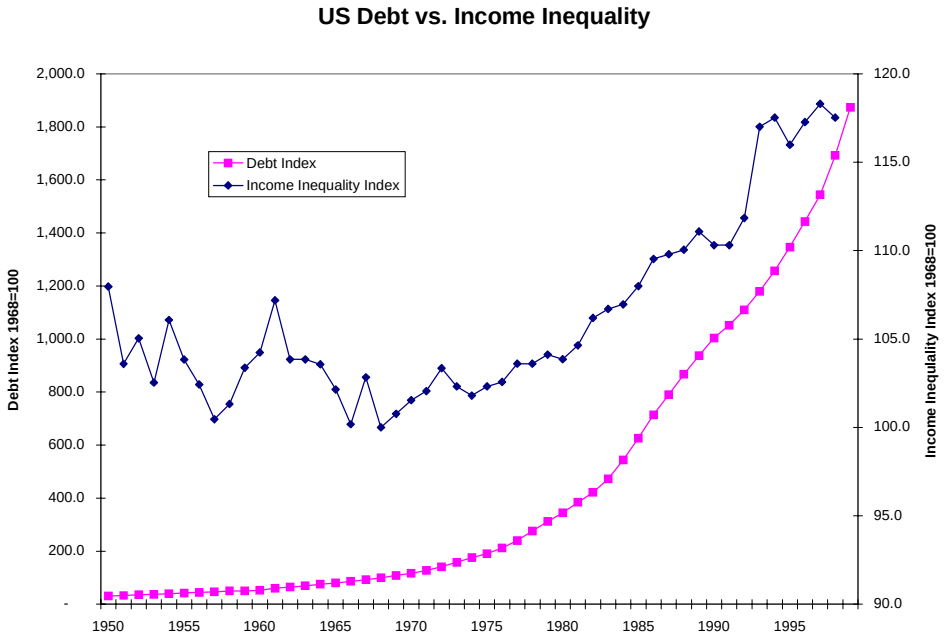
This trend in living capital indices is shown in the next graph (figure 15).

[2] . The LPI is generated by averaging three separate indices for the forest, freshwater and marine biomes for nations establishing 1970 as the benchmark year against which trends are examined. The forest index is based on change in the area of natural forest cover worldwide from 1960 to 1990. The freshwater and marine biome indices are based on the changes in populations of freshwater and marine vertebrate species since 1970. In the temporary absence of detailed US data for the LPI (we are awaiting the time series from WWF), we use the global LPI.

Figure 15



Other disturbing trends and relationships emerge from the data including the apparent relationship between increasing in debt and income inequality in the U.S. (see figure 16). This graph shows that the trend in rising income inequality is virtually identical to the increase in outstanding debt. Does this provide some evidence that the distribution of virtual wealth and associated power over money creation and virtual wealth is coming at a cost to the majority of households? We cannot be certain though the picture suggests a relationship that is peculiar. (**figure 16**)



14. (Ecological) Monetary Reform

"*Money is capable of doing what we want it to do, rather than (as at present) making us do what it wants us to do. Money is capable of reflecting reality and conveying the policy we want. The true worth of money as an invention, frankly, has never been fully explored. The range of reform facing us, once we decide to correct the overbearing mathematical defect of debt, are as rich as the diverse opportunities and material benefits our economies can possible offer. In fact, in a sense they are the one and the same thing*." (Rowbotham, 1998).

So what are we to do to change the nature of money and money creation such that we avoid a collapse in both financial and real wealth and to put the world on a path of sustainability? If money is human construct and banking a human institution then it is possible to reorient the nature of money to support goals of sustaining and improving the productivity of real wealth – natural, human, social and human-created capital.

There have been many monetary reformers before our time who recognized, of ten after the fact of a systemic collapse, the need for monetary reform. These include Abraham Lincoln, Frederick Soddy, Irving Fisher, and C.H. Douglas (England).

Abraham Lincoln's remarkable monetary policy statement to the U.S. Senate in 1865 reveals what is possible given the will of those in power to reform a monetary system to serve the needs of humanity, the households of the nation:

"Money is the creature of law, and the creation of the original issue of money should be maintained as the exclusive monopoly of national government. …The monetary needs of increasing numbers of people advancing towards higher standards of living can and should be met by the government. Such needs can be met by the issue of national currency and credit through the operation of a national banking system. The circulation of a medium of exchange issued and backed by the government can be properly regulated and redundancy of issue avoided by withdrawing from circulation such amounts as may be necessary by taxation, re-deposit and otherwise. Government, possessing the power to create and issue currency and credit as money…need not and should not borrow capital at interest….The financing of all public enterprises, the maintenance of stable government and ***ordered progress*** *[my emphasis], and the conduct of the Treasury will become matters of practical administration…Money will cease to be the master and become the servant of humanity. Democracy will rise superior to the money power." (Abraham Lincoln, Senate document 23, p. 91, 1865)*

The reality of the U.S. more than 130 years later is far from the vision of Abraham Lincoln. Control over money creation is neither in the hands of a democratically-elected Congress nor is monetary policy conducted by Treasury, empowered by Congress, rather it is the Federal Reserve and private banks who control the power over money. Indeed we still have far to go to convert money from master to servant of humanities needs.

Frederick Soddy recommended that "restore honesty and accuracy to the function of money in the economic system" (Cobb and Daly, 1994) required three basic reforms:

1. a 100% reserve requirement for commercial banks;
2. a policy of maintaining a constant price index;
3. freely fluctuating exchange rates internationally.

Soddy envisioned a monetary system that was connected with real wealth thus to eliminate the obfuscation prevalent in a largely chrematistic world. What Soddy advocated was money creation that is

tied to the physical laws of nature (laws of thermodynamics) and the real wealth of communities, including natural capital. Soddy (1943, p. 24) noted that the "acid test (for such a monetary system) is that no monetary accountancy be allowed that could not be done equally well by physical counters." In a sense he was suggesting the potential development of living capital or real wealth accounts - balance sheets and income statements as proposed earlier in this paper that would yield a full account of the state of real wealth in a community or nation upon which money would then be created or extended. Money creation would then be tied to the sustained well-being of all living capital, no longer disconnected from that which makes life worthwhile and no longer leading to the unwitting destruction of real wealth.

Daly and Cobb (1994) support Soddy "*We believe these policies remain very sensible even though the world has changed much in the half century since they were suggested*." The key reform is the adoption of a 100% reserve requirement for private banks. Depression-era economist Irving Fisher (*100% Money*) was also a strong advocate for 100% government-created money. This would preclude private banks from creating and destroying money as they currently do through lending money into existence out of nothing. This would effectively return the power over seigniorage and ownership of virtual wealth to the State. This would also mean that seigniorage (issuance of currency) would come under the control of the government so that seigniorage could then be extended to serve public policy objectives, including supporting the sustainability of social, human, and natural capital assets of a State. The calibration of purchasing power would thus be in the hands of government allowing it to use this power to direct "investment" towards sustainability and socially equitable policy goals. More importantly, the State could issue money without cost (interest) to the taxpayers given its sovereign power, unlike private banks who currently issue debt-money with a cost called interest. This system would provide increased resiliency and stability to the current debt-money system whose exponential growth function eventually becomes unstable and collapses. Of course, such reform would constrain the current exponential growth and profits path that has been exhibited in national debt, GDP and stock market statistics

C.H. Douglas, founder of the Social Credit movement in Britain in the 1920s, raised the debate over monetary reform to a new level (Rowbotham, 1998). Douglas, an eminent engineer by profession, claimed that the financial system (with reliance on bank credit- debt-money) made the economy both unstable and dependent on continual investment and growth that would eventually lead to collapse. Douglas argued that firms and households would be obliged to undertake more growth and more production as a result of debt-money creation. He showed that such a monetary policy ultimately led to over-production, export surpluses, poor quality goods, and (we might add) the destruction of ecological and natural capital. Douglas questioned the very premise in economics of scarcity, specifically scarcity of money. In fact, debt-money by its nature is unlimited so long as there are firms and households willing to accept increasing amounts of debt whose increased cost (interest) is paid out of increasing production and efficiency gains. He noted that the financial system does not reflect the physical realities or constraints of the physical, economic, environmental, human and social system of true wealth or capital.

Douglas's recommended the following reforms (Rowbotham, 1998, p. 227):

1. Equate purchasing power and prices. People would be able to buy the goods and services available in the economy without the need to invest and expand the economy simply to distribute incomes and sustain the exponential debt function.
2. Governments create debt-free money (seigniorage) to compensate for the debt created by the banking system at the prices of interest.

The ideas of Douglas have been reinvigorated by the Social Credit Secretariat in the U.K. Their platform and remedies for monetary reform, that build on some of Douglas's ideas is as follows produced by the Social Credit Secretariat in the U..K. (1998):

"If the inevitable impacts of the current debt-money system that drives international economies, and

which points to its own eventual breakdown, are to be mitigated there must be radical reform. It must begin with reform of the present debt-money system. The current authority granted to private banks to create money must be withdrawn. The authority to create the nation's money supply must be restored to the state, via some National Monetary Authority, but with suitable safeguards to prevent any prospect of manipulation for party political purposes. Such Authority would have the responsibility for ensuring that the money supply matched, as precisely as possible over time, the potential of the economy to produce goods and services and the community's expressed desire that they should be so produced. Any tendency to inflation would therefore be checked. Specific and detailed proposals for such reform of the money and banking systems were advanced in the 1930s by Professors Irving Fisher (America's "greatest scientific economist") and Henry Simons. They are still relevant to the debate today. In this context it should be noted too, that within the Canadian Parliament's Act establishing the Bank of Canada in 1935 arrangements for such reform were included."

Milton Friedman (1992, 1990) weighs in on the subject of monetary reform recommending an amendment to the American Constitution whereby "Congress shall have the power to authorize non-interest-bearing obligations of the government in the form of currency or book entries, provided that the total dollar amount outstanding increases by no more than 5 percent per year and no less than 3 percent… a Constitutional Amendment would be the most effective way to establish confidence in the stability of the rule…Congress could equally well legislate it."

In an future era where natural capitalism becomes the rule of law (Hawkens, Lovins and Lovins,1999) is it not possible to dream of monetary policy which serves the needs of society to sustain natural, human, social and human-made capital? What if money were created based in part on information about the sustainability of nature's capital -- finite nonrenewable resources (oil, gas, coal, minerals) and renewable resources (forests, water, ecosystems)? What if monetary policy would take directions from the information contained in a genuine progress indicator account of the nation whereby liquidity would be extended on the basis of evidence of unsustainable, sustainable or expansionary possibilities of real wealth and genuine improved well being.

What is required is reform of monetary policy for all nations where money creation is reoriented to the source of the real economy, including nature's capital, as well as human and social capital. How would such a "natural capital/commodity-based" currency be constructed? Evidence of resource scarcity and damage to ecological services might form the basis for constricting or expanding money supply of the central bank as well as credit expansion of private banks. The monetary policy goals would be refocused on improved resource efficiency/productivity and improved ecological integrity. New money would be created to fuel investment to serve the objectives of sustainability and current welfare as it was originally intended and considered by some including Abraham Lincoln. The creation of money and financial investment would then be partly based on achieving objectives of sustaining natural capital and ensuring the health of ecological systems rather than ignoring them as economic systems currently do.

Consider a potential future scenario. Monetary policy and investment decisions are made based on the evidence contained in the GPI/ISEW accounts that measure the physical and qualitative state of real wealth -- natural, social, human, and human-made. The majority money supply is created by the national government with the central bank having an expanded to include the control and protection of natural, human and social capital. Private banks would continue to exist but would move to a 100% reserve or 100% deposit system as many believe the system currently operates. Bankers would become intermediaries of exchange between depositors earning an income from the exchange process. Money supply would to expanded or contracted based in sufficient amount to provide sufficient blood flow for the oikonomia on evidence of the state of living capital contained in total real wealth accounts (total wealth balance sheets and full benefit-cost income accounts. In addition, community banks, local currencies and local exchange transaction systems (LETS) would part of a financial infrastructure serving

as an exchange of time (human energy), goods and services that would sustain local needs of the community. This would also reduce the need for the vast import-export markets that typify global "free trade." Money and the money power would then be returned to a role of service to meet the genuine needs of all people who live in communities and help support genuine progress.

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I believe this is an issue worthy of considerable research and investigation for the emerging field of ecological economics. Elevating the importance of money to the sustainable development discourse is a first step to discussing reform of money and monetary policy to achieve the sustainability of ecological, human and social capital. The issue raises the high-bar for economic research beyond simply revised national income accounting like the GPI/ISEW. The issue of money is at the heart of our consumption-growth-biased economies. This preliminary will hopefully provide a catalyst for pursuing these ideas more fully.

Tomorrow's vision is for a major transformation in economic systems -- a national well-being accounting system and real-wealth-monetary policies used by governments, communities, households and businesses to guide and manage for the well-being of the people and our natural environment.

15. Conclusions

The paper examines two fundamental flaws of misplaced concreteness in economics. First, is the obfuscation of the Greek root word "oikonomia", which refers to study of the well-being and stewardship of the household, habitat or natural environment. Instead economics has become more aligned with "chrematistics" (a word almost forgotten in modern dictionaries) which refers to the study of wealth or a particular theory of wealth as measured by money. The second greatest error in economics is the confusion of wealth, which is a magnitude with an irreducible physical dimension, with debt (money), a purely mathematical or imaginary quantity (Daly, 1996). The shortcomings of measures of oikonomia, such as the GDP and national income accounts, have long ago been acknowledged by one of its architects Simon Küznets (1954, 1965), and more recently Waring (1988) and Daly and Cobb (1994). The emergence of new measures of economic, societal and ecological well-being is evidence that some of these shortcomings are finally being addressed. For example the UN Human Development Index (HDI), the Index for Sustainable Economic Welfare (ISEW; Cobb), the Genuine Progress Indicator (GPI; Cobb, Anielski), the Index for Economic Well-being (IEW; Osberg and Sharpe), and the Index for Social Health (ISH; Miringoff).

The latest evidence of the US Genuine Progress Indicator (GPI) for 1998 reveals a continued decline in the well-being of the households of the nation whilst economic growth has continued to grow. The trend of declining GPI in the 1990s continued in 1998 though there were promising signs that income inequality had moderated.

Comparing the Canadian GPI estimates with the US GPI estimates reveals Canada outperforming the US in terms of this broad measure of well-being, certainly since the early 1980s.

Improvements in accounting for well-being are many. A new architecture for accounting for the real wealth and sustainable income of provinces or nations is examined that is more aligned with the accounting framework of firms than with traditional national income accounts. The development of a total wealth balance sheet and sustainable progress income statements is proposed and work is beginning on piloting such a new wealth accounting system for Alberta and Yukon through the Pembina Institute for Appropriate Development. Such accounts would provide a transparent and unbiased account of the genuine state of all living and produced capital assets

and liabilities while also redefining income in accordance with the notion of sustainable income – that is, the maximum amount that a nation (or state) can consume while ensuring that all future generations can have living standards that are at least as high as that of the current generation. (National Research Council, 1999); p. 187).

While new methods for accounting for the well-being and real wealth of nations are welcome, such an accounting of oikonomia of nations will be meaningless without a understanding how the chrematistics of money and money creation affects and obfuscates these efforts. Money is the lifeblood of all economies yet few understand how it is created and how this process leads to destruction of living capital (human, social, and natural) and the real wealth of nations. Understanding what money is, how it is created and where the balance over money creation is held is critical to redefining the well-being of nations. Only fundamental reform of monetary policy and the process of money creation will the chrematistic world of virtual wealth (stock markets, currency markets) become aligned with oikonomia – stewardship of the physical world and human experience of quality of life. The voices of the past, including atomic chemist and economist Frederick Soddy (1926, 1934, 1943), must be resurrected in order to stimulate a lively and important discussion to examine how to shift the world from a massive *ad finitum* build up of virtual wealth (debt, stock markets and even GDP) over the past 50 years whilst eroding the physical, living and real wealth (capital) of the nations.

The paper examines numerous pieces of evidence that shows that over the past 50 years a massive disconnect, indeed obfuscation, has taken place where money and debt has been confused with the stewardship of real wealth. Comparing growth in money-debt, stock market values, the GDP, the GPI (as a proxy for genuine economic progress), the ISH (index for social health), and other indicators of living capital, the growing gap is evidence that while the US (and likely other nations) are making money they are also growing poorer in terms of that which makes life worthwhile.

Daly and Cobb (1994), Korten (1999), Rowbotham (1999) and others from various disciplines are raising and affirming Soddy's astute economic observations that an economy built of debt-money, disconnected from the natural laws (laws of thermodynamics) would eventually lead to a reductio ad absurdum where a perpetual delusion of prosperity is maintained through the obfuscation of the realities of living on debt, whilst real wealth is being consumed. The paper raises a fundamental challenge to both economics and business disciplines to explore not only the reform of national accounting systems to provide a more meaningful barometer of the oikonomia but also the reform of traditional financial and management accounting systems to measure social, environmental and financial performance. Most importantly, the paper calls for a fundamental reform of monetary policy, the elimination of fractional reserve banking, and the alignment of money creation to oikonomia objectives of improving or sustaining the real wealth of nations. Can the nature of money and monetary policy be restructured so that it serves the desired outcome of citizens for the sustainable welfare of natural, human or social capital – in short, improved societal well-being?

If humanity wishes to pass over to the 21st Century as a people of hope and genuine well-being, economist, policy makers, business leaders and average citizens must unit to address these fundamental reforms of both national income accounting and monetary policy. The paper presents some preliminary recommendations for such revisions whereby the creation of money is aligned with total wealth accounts expressed in both quantitative and qualitative terms as people experience life and as the physical laws of nature dictate. Can money and money creation be reformed such that it would be tied to real economy and real capital –- natural, human and social capital – and thus be of service to achieving goals for societal well-being and sustainability? I believe so.

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