Achieving environmentally sustainable prosperity

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Abstract (188 words)

The contribution of this paper is to explain how to achieve a universally prosperous environmentally sustainable global society. This objective is incompatible with traditional economic policies dependent on environmentally exploitive growth in the population and/or full employment to generate prosperity. Politically attractive incentives of smaller taxes and government are identified as a way of changing the way an economy operates so that prosperity can be increased even with a declining and aging population. Localising the ownership and control of the means of production and exchange with individuals creates a way to create a universal minimum social dividend to replace the need for full employment, welfare, pensions, and big government. Local democracy is enriched with the power to nurture their host environment. The introduction of ecological forms of cost carrying money redeemable into local services of nature allows market forces to encourage production techniques that reduce their environmental impact. Increased life expectancy with depopulation is already occurring in twenty countries and this is expected to spread globally in the current century. This phenomenon with current environmental pressures create an imperative for achieving environmentally sustainable prosperity sooner rather than later.

Key words: Ecological capitalism, Energy dollars, Network governance, Self-financing communities, Social dividend, Stakeholder society,

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1. Why we need a new type of market economy.

The contribution of this paper is to explain how to achieve a universally prosperous environmentally sustainable global society. This objective is incompatible with traditional economic policies dependent on environmentally exploitive growth in the population and/or full employment to generate prosperity. Politically attractive incentives of smaller taxes and government are identified as a way of changing the way an economy operates so that prosperity can be increased even with a declining and aging population. Localising the ownership and control of the means of production and exchange with individuals creates a way to create a universal minimum social dividend to replace the need for full employment, welfare, pensions, and big government. Local democracy is enriched with the power to nurture their host environment. The introduction of ecological forms of cost carrying money redeemable into local services of nature allows market forces to encourage production techniques that reduce their environmental impact.

The changes required to achieve sustainable prosperity are shown to be not as great as the societal changes that have occurred over the last millennium. However, there is an imperative to achieve the changes in a very much shorter time. Increased life expectancy with depopulation is already occurring and this is expected to spread globally in the current century (United Nations 2003).

The imperative for designing an economic system to achieve prosperity without growth sooner than later arises from:

1. The need to protect and nurture the environment to sustain humanity on the planet and for,
2. Coping for the first time with declining populations in advanced economies (Rosenberg 2010).

Rosenberg reports that 20 countries now have negative or zero population growth before immigration with only one country, Austria achieving net positive growth through migration. The Ukraine expects to suffer a 28 per cent decrease in its population from 2006 to 2050 with a 22 per cent decrease in Russia and Belarus and a 21 per cent decrease in Japan. Even strong economic countries like Germany are suffering a declining population.

With such large reduction in populations there could soon arise problems in having excess infrastructure and facilities like water catchments, sewerage facilities, power generators, hospitals, schools, shops, sports grounds, entertainment centres, churches and so on. De-populations in some urban centres could result in many facilities not paying their way with the need for de-commissioning. Ghost suburbs could develop with substantial falls in real-estate values. De-population could also lead to many privatised public facilities becoming uneconomic and/or redundant leading them into bankruptcy.

A noted by Reddaway (1939), a declining population reduces demand for goods and services as well as for new and replacement investment. For these reasons, unemployment can be expected to increase just because the population declines. Reddaway proposed that the State become responsible for providing unemployment income. However since his book was written over 70 years ago, the problem of citizens living longer well past their retirement age is now making impact. The problem is now exacerbated with some countries considering an increase in their retirement age. An increasing proportion of the population is requiring income support to provide at least a subsistence life if not a “good life”. This in turn jeopardises the good life for those employed from the need to increase their tax burden to support growing: unemployment, the old and their growing medical costs.

Increases in life expectancy have been on a straight line for the last 160 years (Weiner 2010). In being interviewed on his book, Weiner (2011) stated “you get an increase in life expectancy around the world in every country that has the benefit of modern medicine”. The increase has been so predicable to date that “It looks as if every day we live, we’re granted another five hours, somewhere down the road.” Life expectancy is being increased by science and medicine so “we’re constantly gaining time even as we use it up, consume it by living”.

According to the United Nations (2003:5) “Life expectancy is projected to increase steadily in all countries after 2050. No limit is set on the increase of life expectancy.” The UN report went on to state that “the world’s dependency ratio rises from 0.7 in 2000 to 1.1 in 2300, implying that by that time there will be more than one “dependent” per person of working age” with working age being defined as being between 15 and 60.

However, increase in life expectancy is not changing the rate we age, even with the benefit of current science and medicine. So the quality of life continues to decrease with age as reported by Milne. Milne (2010) found that there was no change in the rate of aging in a Swedish study that went back to 1751. This means that as populations increase their life expectancy, the need for income support for medical care and income support will escalate.

The tax burden on those employed will spread globally as more nations increase their living standards to provide life extending health care and improved education. Education provides both the incentive and means to reduce the birth rate to accelerate global de-population.

A squeeze will be created on government budgets as more and more medical care and income support is required to support more and more citizens incapable of earning an income while a smaller and smaller proportion of the population remains. Many existing pension plans are insufficiently funded to provide for their beneficiaries as they live longer.

The United Nations (2001) identified a short-solution for the problem for some nations through migration. But as a declining birth rate spreads to more nations this option may soon diminish. The culture of the countries that are expected to maintain population growth from the year 2000 to 2100 might give rise to inhibitions in seeking immigrants from them. “…just three — Niger, Uganda and Yemen—are expected to account for over half of the positive contribution to population growth at that time.” (United Nations 2003: 3).

The United Nations (2003) report identified three possible scenarios of global populations over the next two hundred years. According to the medium scenario, world population rises from 6.1 billion persons in 2000 to a maximum of 9.2 billion persons in 2075 and declines thereafter to reach 8.3 billion in 2175. By 2050, India is expected to have surpassed China in population size and will remain as the most populous country in the world thereafter. However, between 2000 and 2100, the three most populous countries are expected to account for a declining share of the world population, passing from 43 per cent in 2000 to 34 per cent in 2100. China and India alone are projected to account for nearly 48 per cent of the population losses projected to occur in 2100.

Some commentators consider that the root cause of many concern over the sustainability of human society arise because there is “plague of people on the planet[1]”. The need to “Abandon affluence and growth” has been proposed for over a quarter of a century (Trainer 1985). Trainer (2010a) advocates “de-growth” with a simpler lifestyle to reduce the pressures creating climate change, extinctions of fauna and flora, pollution and loss of non-renewable resources.

“The new economy” proposed by Trainer (2010b) has many features in common with the vision described in this Paper as outlined in Table 4. We share concerns over the inefficiencies, and injustices inherent in capitalism detailed in Section 2 and the problems that arise from over reliance on market mechanisms. Also shared is the objective of a society composed of locally controlled largely self-sufficient, self-reliant and self-financing democratically governed communities that can minimise the need for markets by relying more on other co-ordinating mechanism such as families, associations and networks. It is a vision that goes beyond the concerns of many environmental activists (Berger 2010; Gummer & Goldsmith 2007; Jackson 2010) and economists (Daly 1991, 1996).

One fundamental difference of this contribution with “Ted” Trainer (2010b) is his assumption that to initiate change there is a need for an “enormous” change in the values held by people. The approach taken in this Paper is that “The greatest benefits that may arise from the new rules for owning property may be the modifications they may initiate in man’s values and behaviour patters” (Turnbull 1975: 4). This aspect is discussed in Section 3.2 with the proposals for changing the economy through self-interest and market forces.

The next section two identifies the need to reform capitalism to make it more efficient for achieving an environmentally sustainable society. Reformed capitalism also becomes more equitable to promote a “good life”. Section three described politically attractive techniques for introducing what is described as “ecological” capitalism. A vision of a sustainable society is presented with concluding remarks in Section four.

2. Why we need a new type of capitalism

This Section identifies how the existing static, exclusive and perpetual rules for owning and controlling money, corporations and realty are inefficient and inequitable. To ameliorate these shortcomings, different rules are proposed. These are described as “ecological” because they mimic the character of living things by being dynamic, inclusive and time limited.

Ancient ways for owning money described below need to be re-instated because modern money can misallocate resources and it has become a major driver in generating wealth inequality (Turnbull 2010c), and the over expansion of the financial sector described as “financialization” (Palley 2007). Likewise, the property rights of corporations allows investors to be overpaid with “surplus profits” (Turnbull 2006) in a way that is not reported by accountants and so not recognised by economists to generate further inequality and the misallocation of resources. Accounting doctrines exacerbate misallocation of resources and inequities by treating a proportion of investment returns as a cost to reduce reported profits

[1] http://www.spiked-online.com/index.php?/site/article/3337/

by an imaginary expenditure described as depreciation. Inequality is also generated from the private ownership of urban land that can capture windfall gains generated from the investment of others in providing site services, facilities and amenities. These concerns are outlined in turn below.

2.1 The problems of modern money and credit

Markets allocate resources through prices and prices are defined in terms of money. However, money is no longer defined in terms of any specific goods and/or services. As a result the price signals created by legal tender, that is now a national monopoly, can distort the allocation of resources to a greater degree than taxes and tariffs with "faulty feedback" signals (Jacobs 1985: 156).

A mind experiment can illustrate this point using two assumptions: (a) Demand for foreign exchange in any one region is proportional to the population and (b) Western Australia that earns 60 per cent of the foreign exchange of Australia can issue its own currency for its population that only represents 10 per cent of the Australian total. This means that Western Australians are earning six times the foreign exchange they can consume while the Eastern States with 90 per cent of the population only obtain 36 per cent (0.9 x 0.4) of the foreign exchange they require. Separately currencies would make the Western Australia money worth much more than the money in the Eastern States. Manufacturing, tourism and the export of education services would boom in the Eastern States with folk in the Eastern States migrating to the West to obtain a higher standard of living. This mind experiment illustrates a fundamental problem of the Euro and the concerns of Friedman & Schwartz (1996).

More importantly it illustrates how exclusive money can seriously distort resource allocation to support the case presented by Hayek (1976a, b) of de-nationalising money to have competing currencies. The price distortions and resulting inefficiency of modern money are exacerbated by it being allowed to earn interest that also introduces inequities.

Proudohn (1840) pointed out that all real assets depreciated and/or carried a storage cost except paper money. To provide a level playing to create what Suhr (1990) described as "neutral money", Gesell (1919) proposed that money should only be issued if it carried a cost. The private issue of cost carrying money was initiated in Germany in the 1920's and was so successful in stimulating depressed communities during the Great Depression that it soon spread in Europe and on to the US (Fisher 1933). Keynes (1936: Chapter 23, part VI) supported cost carrying money that was described as "Stamp Scrip". Keynes described Gesell as "unduly neglected prophet".

So successful was the use of stamp scrip in Germany, Austria and the US that it threatened the monopoly of official money and so was banned. The carrying cost was created by the need to periodically affix a stamp on the back of the script. Revenues from the sale of stamps paid for the redemption of the money. It allowed communities to stimulate their economies with a self-financing with self-liquidating locally issued currency.

The Economist (2009a) suggested that "depreciating currencies" be re-introduced to stimulate economies after the Global Financial Crisis (GFC). Today, paper money and stamps would be replaced with cell phone money that is now spreading around the world. There are now four billion cell phones, mostly in developing nations (*The Economist* 2009b; Turnbull

2010b, c).

Cell phones have become electronic storehouses for money. In ancient Egypt, grain was used as money and deposited in storehouses. Deposit notes were issued in form of scratches on shards of pottery. Rather than earn interest, deposits incurred a storage fee and in some places also a tax (Suhr 1989). Cost carrying money has been the rule throughout history until the duplicity of fractional banking was introduced that allowed money to be created out of nothing.

The ability of private banks to create credit out of nothing and then charge an interest rate exacerbates "financialization", wealth concentration, inefficiencies and instability in the financial system. Huber & Robertson (2000: 89) estimated that if instead the government carried out the credit creation then UK tax collections in 1999 could have been reduced by 15 per cent. The Governor of the Bank of England, Mervyn King, suggested that the practice of "fractional banking" be eliminated (King 2010).

King (2010) went on to state: "of all the many ways of organising banking, the worst is the one we have today". A number of the indefensible practices of the existing system are explained in a Table described as: "Mysteries of a failed financial system and how failure can be avoided". The Table[2] outlines the contents of Turnbull (2010c) that explains more fully the proposals included in this Paper.

2.2 The problems of perpetual property rights

Perpetual property rights for investors allow investors to become overpaid. All intellectual property rights are time limited. Time limited investments are the norm as productive assets wear out or deplete. Perpetual property rights have only been created for owning land and corporations. To create a level investment playing field time limits need to be applied to all investments. This can also ameliorate the overpayment of investors and the associated concentration of wealth. Overpayment of investors is also inconsistent with the objective and reason for having a market economy to efficiently allocate resources.

In making a decision to invest, a commercial investor will not rely on the unforeseeable future to recover his or her investment and obtain a competitive return. To the extent an investor receives a return after their foreseeable feature the investors is obtaining value in excess of the incentive to invest. Values in excess of their incentive to invest are described as "surplus profits" (Turnbull 1997: 142; 2006). Unlike profits, or any excessive profits that are reported by accountants, surplus profits are not identified or reported because accountants do not identify investment time horizons. This makes surplus profits different from other types of economic rent that are reported by accountants.

Because surplus profits are not reported, economic analysts are denied understanding how wealth in the form of asset ownership becomes highly concentrated. Surplus profits can be very substantial to become one or more times greater than the original investment (Turnbull 1973). More critically, economic analysts do not have a basis for understanding the full cost to communities that host alien investment. As a result foreign investment is widely promoted

[2] The Table is posted separately on the Ethical Markets web page at http://www.ethicalmarkets.com/wp-content/uploads/2009/04/mysteries-of-the-financial-system.pdf

even though it may introduce excessive cost over benefits from its growing "unlimited, unknown and uncontrollable foreign liabilities" (Penrose 1956).

Another problem with the profits reported by accountants is that they under-report economic returns. This is because accountants reduce reported returns by creating artificial costs described as depreciation or depletion. This artificial cost typically creates a tax deduction because unlike accountants, governments consider the cash received as a return *of* the investment and not return *on* the investment. In this way an investment being depreciated over then years that is producing a net cash return of 20 per cent will only be taxed on 10 per cent. With a 30 per cent tax rate the reported return becomes a marginal 7 per cent. The after tax cash return to the investor becomes 17 per cent and an acceptable 11 per cent after taking into account the time value of money.

The policy lesson for governments from this insight is that ownership of any investment should be written off at the same rate that it is written off for tax purposes. This would not change the reported profits as the cost is already taken into account by the artificial cost of depreciation. For the various reasons set out in Turnbull (1998, 2000, 2001a) it makes good sense for the ownership of the assets being written off to be vested in the individuals who are essential for a firm to exist such as its suppliers, employers and customers. In this way surplus profits become shared with stakeholders who participate in their creation. This provides one way to democratise the wealth of communities and so nations.

To sum up, corporations introduce seven deadly sins to capitalism as they can be:

1. Inefficient by not distributing all their surpluses to allow their managers rather than market forces allocate their investment funds yet be allowed to grow too big to be allowed to fail;
2. Inequitable by over-paying investors with surplus profits not reported by accountants and not understood by economists;
3. Exploitive by not sharing surplus profits with their stakeholders on whose contribution they depend for their existence and to make profits.
4. Alienating by not sharing power with employees and other stakeholders.
5. Poorly accountable while acquiring more resources, social, and political powers than some levels of government, yet not directly accountable to their stakeholders whose lives they affect.
6. Non-transparent, hiding the identity of their ultimate ownership and control with owners voting on a plutocratic basis that provides the wealthy with the most votes.
7. Degrading for democracy by their influence over the political process and by providing government services.

<u>2.3 The problems of private windfall gains from public investment</u>

Another way in which the current rules of ownership create inefficiencies and inequities is from windfall gains obtained from the private ownership of urban land. The uplift in land values can occur from the site being approved for greater development and/or from surrounding improvements made in servicing the site with utilities, facilities and amenities by various levels of government and/or by private investors.

It is both inefficient and inequitable for government expenditure spent on utilities, roads, transport, schools, hospitals and other amenities to provide private profit to nearby landowners. The degree to which public investment creates private profit is not commonly revealed because economists or anybody else do not typically prepare balance sheets for communities. What is not measured is not managed. Windfall gains, like surplus profits are not generally reported and so not recognised by economists, policy makers and governments.

An illustration of the extent of how government investment can generate private profits is provided by the construction in 1999 of the Jubilee underground tube line in London. The cost of the project was 3.5 billion pounds. The uplift in land values within 1,000 yards of each of its eleven stations was 13 billion pounds (Riley 2002).

Public expenditure could have been avoided and greater equity and efficiency achieved by the landowners financing the construction from the uplift in values they obtained. Even if the landowners borrowed all the construction costs they would still have received a net benefit of 9.5 billion pounds. However, this would still be unequitable as it is not the owners who create the uplift in values but the users of the sites and facilities. Sites and services without users have may be worth little.

As uplift in land/site values are created by the community then an equitable system of ownership would allow the community to share in the values so created. If all the land, but not the buildings, within 1,000 yards of each of the 11 Jubilee station had been collectively owned by a cooperative of all residents then each resident would receive a windfall gain of around 75,000 pounds using the data and assumptions in Turnbull (2007). Each cooperative would have a net worth of 9.5/11=864 million pounds after paying for the project with each resident owning cooperative shares worth around 74,000 pounds.

While mutual ownership of land would be created by the cooperative or Community Land Bank (CLB), the buildings would still be privately held by investors and/or residents. This is how the Garden City of Letchworth 60 miles north of London was financed at the turn of the last century (Howard 1902). The example demonstrates how urban development can be made self-financing by capturing the values created by the community and being owned and controlled by residents.

A condition precedent for any government to finance public works that generate windfall gains is that such gains be shared on a mutualised basis with only residence as described above. By eliminating alien and foreign ownership of land, this approach would reduce the leakage of values out of communities and their host nations. CLBs provide a way to make the financing of “transition towns” self-financing to spread their emergence to create a green economy as envisaged by Berger (2010).

The cost of urban land typically represents around half the cost of a house in the US, UK and Australia (Turnbull 2007). The ability of CLBs to make land self-financing as indicated above allows the cost of land to be removed in new towns inner city re-development projects. In this way CLBs can provide half cost housing and eliminate the cost of land for commercial investors in rental housing, retail outlets, office buildings, entertainment and sporting facilities. However, the condition for providing land without cost to commercial developers could be tied to a requirement that as they wrote off their investment for tax purposes the ownership of their investment would be transferred to nominees of the CLB. In this way all tenants in rental housing would acquire ownership of their residence without cost and the CLB would become the owners of supermarkets, office buildings and factories. The rent/rates from the commercial sector provide cross subsidies to sustain low cost housing over generations (Turnbull 2007). In the event de-population arises CLBs are well placed to restructure their community as they have integrated control over intergenerational facilities.

3. Making capitalism efficient, equitable and sustainable

The section outlines how the adoption of ecological property rights for owning and controlling money, firms and realty can make capitalism more efficient, equitable and sustainable.

But more importantly, ownership of income producing assets becomes universal for all citizens to provide a "third way" to distribute national income without employment or welfare. It is by this means that prosperity can be achieved without growth. As the government is no longer required to raise taxes and distribute welfare, the size of government can be reduced. This in turn increases prosperity as the dead weight transfer costs of government are reduced.

Rules for owning money, firms and realty created by society can be changed by society. The incentives to change the most fundamental defining feature of capitalism arise because the new rules provide greater benefits for a greatest number of people. Because of this there exists the opportunity of obtaining a political mandate to initiate the changes described. In this way the venal materialistic values of self-interest can assist change to overcome the concerns of Trainer (2010b). The new institutions created would then provide incentives for citizens to change their behaviour from the collective interdependencies that would arise.

The introduction of ecological property rights would create three new types of market institutions: (a) cost carrying money; (b) Ownership Transfer corporations (OTCs) and (c) Community Land Banks (CLBs). However, while changing the nature of property rights is a necessary condition for building a sustainable society it is not sufficient.

Also required is ecological control described as network governance that is ubiquitous in nature. Such is the efficacy of network governance that it spontaneously emerges when society become more complex and dynamic (Jones, Hesterly and Borgatti 1997). The reason for its success is because 'Nothing can be made simpler without becoming more complex' as noted by of the founding CEO of the Visa card organisation, Dee Hock (1995). In other words, as society gets more complex it requires a requisite variety of complexity in its communication and control circuits (Ashby 1968: 243). In this way tasks can be sufficiently simplified to match the limited ability of humans to multi-task and/or process data (Turnbull 2001b; 2002).

Both evolution and the analysis by Simon (1962) provide evidence that the communication and control architecture of nature creates the most robust way to create or manage complexity. Innate physical structures of nature and biota always create or manage complexity by using simpler sub-components. The universe is made up of components that Hock describes as 'Chaords' (Hock 1995) because they represent both chaos and order. The academic literature describes these components as 'holons' (Mathews 1996) as the whole creates more than the constituent parts.

A hierarchy of holons is described as a "Holarchy" (Koestler 1967). Holarchies have properties diametrically opposed to hierarchies. Hock (1995) highlighted the difference by writing:

> Industrial Age, hierarchical command and control pyramids of power, whether political, social, educational or commercial, were aberrations of the Industrial Age, antithetical to the human spirit, destructive of the biosphere and structurally contrary to the whole history and methods of physical and biological evolution. They were not only archaic and increasingly irrelevant, they were a public menace.

The ecological architecture developed by evolution provides a basis for designing the governance architecture of an advanced complex global society. A democratic society governed from the bottom up composed of self-financing locally owned and control self-governing communities that are mostly self-reliant.

To allow communities to be self-governing they must become self-financing to avoid economic and so political dependency. The same principle applies to all the higher levels in the political holarchy presented in Table 1, Global Governance and Political Economy. To allow communities to become self-financing they need to stop value leaking out. Many families spend over a third of their income on rents or mortgage payments. To stop rents and interest leaking out it becomes essential for communities to establish their own local currency and minimise any external ownership of land, buildings and enterprises. As explained later, OTCs provide a way to minimise external ownership of firms and CLBs provide a way to minimise external ownership of realty.

Table 1, Global Governance and Political Economy

Level	**Principle role[(a)]**	**Other roles[(a)]**	**Source of funding[(b)]**
Family	Personal and social development	Community and cultural development	Work and/or dividends, rents, profits etc.
Enterprises	Wealth generation	Fulfilling work	Self-financing
Neighbour-hoods	Social & cultural support	Substitution of paid services	Non-profit & voluntary contributions
Land banks (CLBs)	Income distribution between entities	Health, education, welfare, & other infrastructure services	Enterprise rents & gains from site trades
Cities	Provide infrastructure	Balance income between CLBs	Taxes from CLBs
Bio-regions	Federating economic & political systems	Co-ordinating infrastructure services	Green taxes from degrading enterprises
Regional bio-spheres	Federating bio-regions	Co-ordinating economic structures in regional bio-spheres	Green taxes from bio-regions
Global	Governance of global commons	Co-ordinating political structures in regional bio-spheres	Green taxes from regional bio-spheres

[(a)]Roles allocated on the basis that no level of government should carry out any function, which is better undertaken at a lower level as per the 'Principle of Subsidiary Function' (Schumacher 1975: 203).

[(b)]Sources of funding based on the medieval cascade system of taxation where each level of government taxes the next lower level, which it represents. No taxes on individuals or the profits of enterprises. Redistribution of income is achieved through the private sector from the democratic distribution of income producing assets and cross-subsidisation through land bank rentals, property trades and provision of welfare services.

The establishment of local ecological currencies with ecological rules for owning firms through OTCs and realty through CLBs provides ways to plug the drains that invisibly suck out economic value from communities.

3.1 Ecological community currencies

The reasons why the existing nature of money and the financial system should not be replicated have been indicated in the previous Section. A community currency is not just required to plug economic leaks but to also establish a local unit of value that is defined by the natural endowment of the host bioregion. In this way the local environment can provide self-correcting price signals to maintain its sustainability that get lost with a national monopoly currency as discussed earlier and by Jacobs (1985: 156). Money redeemable into units of value of locally available services of nature will be described as "Green dollars".

Table 2, Existing and Ecological Money outlines how green dollars contribute to building an ecological economy with quite different operating characteristics. Local Employment and Exchange Trading Systems (LETs) allows any person in a community to create and/or obtain credit. There has never been a need since money was invented for either governments or banks to create credit as set out in Table 2, row 1. Anybody can create credit. Hand written IOUs were used as hand-to-hand money in Sydney Town early in the 19th century before there was a printing press or the discovery of precious metals in the Colony (Butlin 1953). Other parties also signing the notes would reinforce their creditability and acceptance. Creditability can also be provided with acceptable third party guarantors. The guarantee fee would create a carrying cost as noted in Table 2:2 and at 2:7.

Table 2, Existing and Ecological Money

	Difference between:	**Existing money**	**Ecological money**
1	Money created by:	Government & banks	Traders and investors
2	Interest rates fixed by:	Central Bank	Cost of risk insurance
3	Expansion of money:	Government ratios/regulation	Value of transactions
4	Money defined by:	Government fiat	Local resources of nature
5	Choice of currency	Government monopoly	Determined by community
6	Inflation control by:	'Blunt' policy instruments	Value of renewable energy
7	Structure of money:	Unlimited accrual of interest	Carrying cost limiting life
8	Economic flaw-1	Incentive to own money	Disincentive to hold money
9	Economic flaw-2	Allocates resources to finance	Real assets more attractive
10	Economic flaw-3	Distorts price relativities	Price related to sustainability
11	Environmental flaw-1	Incentive to burn carbon	Favours renewable energy
12	Environmental flaw-2	No feedback from nature	Nature controls price signals
13	Social flaw-1	Compounds unearned income	No unearned income
14	Social flaw -2	Concentrates influence	Localises influence
15	Political flaw-1	Concentrates power	Enriches local democracy

Over the millenniums money has always been a product of nature that incurred a storage and/or insurance cost (2:2; 2:7). Cost carrying money reduces the resources absorbed by the financial system because it removes the incentive to invest in synthetic paper assets (2:8) rather than in the real economy (2:9; 2:11). In this way cost-carrying money paradoxically reduced the cost of the financial system whose purpose is to service the real economy.

Cost carrying money also improves equity as it removes the ability for money to make money from earning interest (2:13). Instead of capturing "unearned income" (Gesell 1919) an incentive is created to invest in "…processes by which society expands its power to make nature yield its resource more abundantly" (Moulton 1935: 12-13). In this way productivity is increased to reverse inflation while limiting the ability of the finance sector to act like a leech on the real economy.

More importantly, procreative assets by their nature must become self-financing as they increase productivity and crucially they provide the ability for society to live more lightly on the planet by making "nature yield its resources more abundantly". Investments in procreative assets provide the key to increasing prosperity without consuming more. In addition any one or more individuals who can obtain credit during their payback period can own procreative assets. The provision of credit insurance to cover their payback period provides a way to encourage the formation and wide distribution of the ownership of procreative assets to reduce inequalities and increase prosperity without growth. Various ways of providing selective credit insurance are described by Kelso & Hetter (1967: 102) and Turnbull (1975; 2006).

No living thing can exist without processing energy, so electricity generated from renewable resources provides a universal inflation proof unit of value (2:6). The relative value of the Kilo Watt-Hours (kWh) generated in each community could vary according to its endowment of renewable resources. But some sort of renewable energy is available throughout the world. As noted in 2:8 the role of money would be simplified to only being a unit of account and medium of exchange and not also a store of value.

Green dollars can be generated by anyone who invests in solar cells, wind farms, hydrogen producing bacteria or other sources of renewable energy. Ideally, mutually owned renewable generators would create the unit of reference value of a community. The generators would be financed by consumers buying their electricity in advance by accepting IOUs issued by the mutual association (that they would then own) to deliver specified kWh at specified future times (Turnbull 2008b). The IOUs would be negotiable to become the reserve green currency of the community. Ideally also, the local government body or Cooperative Land Bank (CLB) would require its rates to be paid in green dollars issued to finance the conversion of renewable energy into electricity. The local government body could then redeem its notes to pay for its street lighting and other energy requirements.

Privately issued cost carrying money described as 'stamped scrip' spontaneously and rapidly spread through Europe and the US during the Great Depression because it was so successful in stimulating local communities (Fisher 1933). The scrip was issued mainly by individual businesses in Europe but in the US it was mainly by the local chambers of commerce. The merchants would agree to accept the scrip presented by their customers. Each Tuesday night the notes became worthless unless the holder placed a stamp on the back equal to 2 per cent of the notes nominated value. In this way the issuer sold stamps over a year valued at 52 by 2 per cent being 104 per cent to allow them to redeem the notes into official money and leave them with a 4 per cent gross margin. While the merchants would need to pay 2 per cent of the value of the notes they held on Tuesday evening, this is but a fraction of the cost of paying over 2 per cent on every credit card transaction.

How many "invisible hands" would support the introduction of cost carrying money is presented in Turnbull (2010b, c). As considered in Turnbull (2009), another GFC could initiate the spontaneous introduction of cost carrying money to complement, augment and/or replace legal tender as it did during the Great Depression.

Today, stamp scrip could be created in electronic form that could be stored on the Subscriber Identity Modules (SIM) of cell phones. Cell phones that can transmit money electronically and/or be swiped at checkout counters have already been introduced in some countries[3]. Electronic natural money redeemable into locally generated kWhs would provide a way for communities to insulate themselves from another global financial crisis. Green dollars create the means to build economic lifeboats to float away from control and exploitation of big money centre banks. To build the most efficient, equitable and effective lifeboats, communities need to also establish OTCs and CLBs as described below.

3.2 Ecological corporations

All the seven sins of corporations identified in Section 2.2 can be ameliorated and/or removed by providing a relatively modest tax incentive for investors to convert existing corporations to OTCs (Turnbull 1975; 2000). OTCs convert investor owned and controlled firms to stakeholder owned firms to provide a basis for introducing a comprehensive form of network governance (Turnbull 2000; 2001a; 2002).

The modest nature of the concession arises because investors discount money that they may obtain in the future twice. First they discount the value of future money because of the lost opportunity to earn interest and profits today. They then discount future values again to recognise the uncertainty of any values being recovered.

Equity investors are much more concerned about not losing the money they put at risk then the prospects of obtaining a return on their money invested. No matter what accountants may report, equity investors cannot make a profit until they have recovered all their investment placed at risk. The time required to recover their funds is described as the payback period. As the payback period gets longer the risk of loss gets bigger. The incentive for investors to vote at a shareholders meeting to convert existing corporations to OTCs in return for a tax concession is that they would obtain bigger, quicker profits with less risk. An analysis of the trade off between perpetual ownership and a tax incentive at various rates is provided in Turnbull (1975: Appendix; 2000).

No changes in the law need be required to create OTCs governed by their stakeholders. OTCs can be formed by corporations creating investment shares that last for 20 years, like patents to create a level playing field for investors. The corporation would also create stakeholder shares that over the 20 years acquire all the property and voting rights of the investment shares. Stakeholder shares would be issued without cost to residential individuals of the host community. In this way all OTCs would become locally owned and controlled to eliminate the draining out of the community profits that Penrose (1956: 79) described as 'unknown, unlimited and uncontrollable'. It makes operational sense to first include those individuals who can make a direct contribution to the success of the firm such suppliers, employees or

[3] As described at http://www.nextbillion.net/remittances-mobile-globe-cash and http://wirelessfederation.com/news/zain-bahrain-launches-zain-wallet-bahrain/ viewed May 5 2009.

customers or individuals employed by suppliers and customers according to the value of their contributions..

Besides being more economically efficient by limiting the export of surplus profits OTCs distribute wealth according to the contributions of its stakeholders. Stakeholder ownership and their representative councils would be controlled on a one vote per person basis with firms becoming accountable to their host community. Firms would not become too big to fail because investors would require all profits to be distributed each year instead of any being re-invested to become owned by stakeholders who had not been investors.

Firms would grow by establishing offspring corporations taking over part of their assets. The offspring firms would be funded with dividends from their progenitor corporation and/or from other sources. This would also improve the efficiency of the capital markets, as shareholders, not managers would undertake re-investment decisions. Shareholders are not conflicted by being involved in the use of the funds and have many investment options than managers. The result would be the creation of many smaller firms to improve competition, social and political accountability with the features indicated in Table 3, Existing and Ecological Corporations.

Table 3, Existing and Ecological Corporations

	Features	**Existing Corporations**	**Ecological Corporations**
1	Rights to life:	Perpetual	Limited to 20 years like patents
2	Ownership rights	Static and monopoly	Dynamic and co-ownership
3	Owners	Located anywhere	Mainly local
4	Creation of corporations	Entrepreneurs & investors	Entrepreneurs, investors and mature fecund corporations
5	Size of corporations	No inherent limit by investors	Limited by investor's short-term return of and on investment.
6	Number	As at present	Many more smaller corporations
7	Governance by:	Shareholders in theory but in practice by directors	Competitively and dynamically determined by stakeholders
8	Regulation by:	By government	By stakeholders and so by local requirements

3. Self-financing urban communities

This Section describes how communities can efficiently restrict the leakage out of value from their community to alien parties through rents, interest, profits and/or capital gains. To achieve these objectives the title deed to land needs to be separated from the title deed to structures over the land (Turnbull 2007) to create a CLB.

Combing the ownership values created in land with the ownership values of buildings creates both inefficiency and inequities because parties providing essential services enhance the value of the land/sites they service but do not share in the uplift in values they create. As a result landowners capture unearned windfall gains generated by the investment by others such as the government who finance the roads, water, sewerage, schools and hospitals and the private sector providing shopping facilities, places or work, amusement and recreation.

Efficiency and equity can be achieved by all buildings being privately owned with all sites on which they are built being owned mutually by all citizens residing in the community with a sufficiently large population to support a number of secondary schools and places of significant employment. In this way sufficient windfall gains created by urban development can be captured by the mutually owned CLB with sufficient rental income for it to become self-financing. As the cost of land is typically halve the cost of a dwelling, this arrangement eliminates the cost of land for pioneer homeowners to half the cost of acquiring a house. It also makes more attractive commercial investment in rental housing, office buildings and shopping facilities as the land cost is also eliminated for them.

All homeowners and tenants obtain one share in the CLB for each square meter of the site they occupy. As only residents can own shares, no non-residents or commercial investors can capture any uplift in land values created by the community to extract value from the community. As residents typically only occupy around 20 per cent of the land area in an urban precinct, the area of land in which residents obtain an ownership interest through the CLB becomes five times greater than a homeowner with a conventional unitary title.

Homeowners can finance and sell their dwellings in the usual way. However, for the buyer to obtain title to the house she/he must buy at market value the CLB shares held by the vendors that are redeemed by the CLB and resold to the buyer. The redemption price discount reduces from 100 per cent to zero over the time required to write off the dwelling for accounting purposes. The profit obtained by the CLB in redeeming its shares and reselling them provides another source of income to allow the CLB to become self-financing.

Because the CLB becomes self-financing, its shares can be gifted to pioneer homebuyers. As investors cannot acquire CLB shares, tenants in rental properties can likewise be gifted shares over the period the rental properties are written off by their owners for accounting purposes. Tenants acquire co-ownership rights to rental properties without cost at the same rate that the property is written off. This does not reduce the reported rate of return for investors. As co-owners tenants have an incentive to undertake repair and maintenance to increase the return of investors who already obtain higher returns by not needing to buy land.

CLBs capture the surplus profits by becoming owners of all commercial developments except rental housing. As CLB provides a way to provide a minimum social dividend to all residents as every resident must become a shareholder. Residents involved as stakeholders from being suppliers, workers and/or consumers of local enterprises would also obtain additional income from acquiring without cost stakeholder shares as described in Section 3.2. It is by this means that national income can be equitably distributed to all citizens without work or welfare.

The provision of a minimum income to all residents of all generations resident in a CLB means that provision for pensions are no longer be required. This would improve the level of prosperity without growth, as individuals would no longer need to forgo consumption to finance a private pension or contribute to a public pension and medical insurance. As CLBs have a comprehensive integrated involvement in all aspect of community life at the neighbourhood level, they are well place to initiate preventive medical care and mobilise the unemployed in self-help and community care activities – refer to row four in Table 1.

The type of society that could result from introducing ecology ownership and control of money, firms and realty are considered in the next concluding Section.

4. Building Sustainable Communities

The type of society that would emerge by introducing ecological property rights to money, firms and realty is outlined in Table 4 History and vision of a transforming society. The changes required to create a stable state more efficient and equitable resilient society with built-in feedback messages from its host environment are less than the changes achieved from the past. However, the time for achieving the changes needs to be very much shorter.

Table 4, History and vision of a transforming society

	Features	**Past society**	**Present society**	**Future society**
1	People treated as:	Property	Resource	Potential
2	Role of women:	Breeding	Cheap labour	Full partners
3	Purpose of work:	Sustenance	Income distribution	Fulfilment
4	Sources of income:	Work	Work or welfare	Work, welfare, dividends
5	Environment:	Subservient	Dominant	Stewardship
6	Natural resources:	Use	Exploit	Sustain
7	Source of land acquisition:	Conquest or inheritance	Purchase or inheritance	Use
8	Land ownership:	Through occupancy	Perpetual	Time of use & so limited
9	Firm ownership:	Start up or inheritance	Purchase/start up & inheritance	Start up, investment and stakeholder rights
10	Business owners:	Proprietors	Shareholders	Stakeholders
11	Ownership period:	Life of owner	Perpetual	Limited
12	Property rights:	Discretion of Sovereign	Static, monopoly and perpetual	Dynamic co-ownership and time limited
13	Structure of business:	Paternal and centralised	Hierarchic and centralised	Nested networks of component holons
14	Monopolies:	Granted to private interests by rulers	Banned or government control	Removed by time limited dynamic property rights
15	Institutions:	Perpetual	Evolving	Dynamic
16	Basis of money:	Commodities	Artificial	Services of nature
17	Creation of money	Decentralised in private sector	Government controlled	Decentralised competitive private sector non-banks
18	Cost of money	Storage & testing	Interest	Cost of risk insurance
19	Allocation of resources	Command & control	Markets	Family, benevolence, semiotics & markets
20	Value system	Absolute	Materialistic	Humanistic
21	Wealth distribution	Autarchic	Market forces	As to contribution & need
22	Accumulation of economic value	Limited by political power	Not limited	Limited by time & dynamic rights
23	Political power	Centralised in ruler	Gov. & big business	Spread to communities
24	Source of power	Inherited, physical	Democracy	Holonic by lot (demarchy)

One of the results of introducing network governance within and between organisations is the decomposition of decision making labour to allow people with little specialised knowledge or experience to make decisions. Life and death decisions in a number of societies have been made by randomly selected people to form a jury to sit in judgement of people charged with murder. Random selection of qualified decision makers was an important element of Athenian democracy and in the governance of medieval cities of Italy (Burnheim 1985). Electing decision makers raises the problem of rich vested interests using their resources to support and/or buy votes of candidates who undertake to make decisions to further the enrichment of those already rich. Political democracies that elect representatives create an inbuilt bias for the rich to get richer.

Network governance makes is practical to introduce an alternative to electoral politics (Martin 2001). The selection of decision makers by lot instead of votes is described as "demarchy" (Burnheim 1985) - refer to the last row in Table 4. Some elements of demarchy are practiced in a number of employee owned enterprises such as the MCC. The key to the constructive implementation of demarchy is for only appropriately qualified individuals to be available for selection. The processes of filtering individuals according to their abilities is, in any event, typical of many pre-selection process in democracies based on political parties.

Another way of distributing political power, influence and wealth is through the rotation of office bearers. The city leader of ancient Athens was rotated each month with a representative from the various suburbs. A practice adopted by today by the European Union who rotate the Presidency every six months with leaders from their member states. To provide continuity each Presidency is shared among three member states over one and half years.

In considering how to design the governance architecture of society, scholars have identified six co-ordinating mechanisms (Hollingworth 2002). Each has strengths and weaknesses but each can be used in various combinations as found in various societies over history as indicated by Turnbull (2001b: 276-7).

In addition, governance architects need to consider the criteria and design concepts embedded in nature. How and why the architecture of nature provides a compelling model for designing an equitable, efficient and sustainable society is presented in Turnbull (2010a). A contribution of this paper is to identify how this can be achieved by introducing ecological property rights and ecological governance.

The consumption of non-renewable resources is likely to seriously exacerbate the problems of achieving sustainable society with a good life. Reduced consumption may well be forced upon society. Trainer (1985; 2010a, b, c) anticipates this possibility with his compelling arguments for adopting a much more frugal lifestyle rather than a "good life". The possibility of achieving a "good life" in the future may only become possible with a much smaller global population.

As the limits of non-renewable resources become widely acknowledged, a political mandate could arise to encourage both de-population and de-growth. Ecological capitalism could assist in making de-population and de-growth political acceptable sooner than later. It is in this way that this Paper could expedite the changes required for achieving environmental sustainability with prosperity. It would result in a society where policies of full employment would be replaced with policies of fulfilment in employment and/or leisure to provide a good life.

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