Sustaining society with ecological capitalism

Shann Turnbull

International Institute for Self-governance, Co-founding Member: Sustainable Money Working Group (UK), Woollahra, Sydney, Australia

Abstract. The research question is how to achieve a prosperous environmentally sustainable global society. The objective is incompatible with economic policies of full employment or of uninhibited use of non-renewable resources. Politically attractive incentives of smaller taxes are identified as a way of changing the way capitalistic economies operates by introducing ecological forms of owning and controlling realty, firms and money. Ecological capitalism facilitates increases in prosperity even with degrowth from a declining and aging population. Crucially, it introduces localisation in citizen ownership and control of the means of production and exchange to provide a basic minimum dividend income for all citizens. A basic income allows full employment policies to be replaced with policies of fulfillment in employment and/or leisure. The cost of welfare and the size of government reduced from the tax reductions creates the political incentive for change. Localisation also enriches democracy with the power for citizens to nurture their host environment. Increased life expectancy with depopulation is already occurring in over twenty countries and this is expected to spread globally in the current century. This phenomenon with current environmental degradation creates an imperative for introducing ecological capitalism as an answer to the research question sooner rather than later.

Keywords: Basic income, ecological capitalism, network-governance, stakeholder-society

1. Introduction

Humanity is facing unprecedented challenges and some scholars argue what we do in the next 10 years will decide how we will live for the next thousand years. A multitude of crises such as witnessed by the 2008 Global Financial Crisis are a prelude of what can happen in a predictable sequence of shocks to the current system that is unsustainable. In this paper, I wish to propose a radical alternative way to conceptualize business and the market economy. I will make the bold claim that we can achieve a universally prosperous and environmentally sustainable global society. I will also layout that we cannot achieve it with the current institutions and setups.

1.1. Why we need a new type of market economy

The contribution of this paper is to consider as a research question how we can achieve a better system and a universally prosperous environmentally sustainable global society. This objective is incompatible with traditional economic policies dependent on full employment and uninhibited use of non-renewable resources. Politically attractive incentives of smaller taxes are identified as a way of changing the way capitalistic economies operates by introducing ecological forms of owning and controlling realty, firms and money. Ecological capitalism facilitate increases in prosperity even with degrowth from a declining and aging population. Perpetual, static and perpetual ownership rules are replaced with time limited, dynamic and inclusive rules. These rules that follow the principles found in nature, allow the ownership and control of the means of production and exchange to be both democratised and localised with citizens. Democratised ownership creates a universal minimum social dividend to replace the need for full employment, welfare, pensions, and big government [49]. Local democracy is enriched with the power to nurture their host environment. The introduction of ecological forms of cost carrying money tethered to a local service of nature allows market forces to encourage production techniques that reduce their environmental impact. Increased life expectancy with depopulation is already...
As outlined in Table 1, the changes proposed for achieving sustainable prosperity are arguably not as great as the societal changes that have occurred over the last millennium.

The imperative for designing an economic system to achieve “prosperity without growth” [18] 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 [37].

Rosenberg [37] reports that 20 countries now have negative or zero population growth before immigration with only 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. There are now 70 countries with their fertility rate at or below the replacement rate. The Economist went on to report: “The move to replacement-level fertility is one of the most dramatic social changes in history” [43]. While this is easing the environmental

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**Table 1**

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impact of humanity it also introduces economic and social problems.

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 [35] 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. This situation currently exists in Europe and Japan. Reddaway proposed that the State becomes responsible for providing unemployment income. However since his book was written over 75 years ago, the problem of citizens living longer well past their retirement age is now making impact. An increasing proportion of the population is requiring income support. This in turn jeopardises the living standards for those employed from the need to increase their tax burden to support growing unemployment, those too old to work and their growing medical costs. To mitigate the problem some countries are increasing the retirement age.

Increases in life expectancy have been on a straight line for the last 160 years according to Wiener [58]. In being interviewed on his book, Weiner [59] 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 predictable 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 [57:1] “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”; the 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 [28] 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 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. Improved education of women allows them to control their fertility. The incentive for less children increases when families have access to income support when the parents become too old to work [43]. In this way increased living standards provide 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. Many existing pension plans are insufficiently funded to provide for their beneficiaries as they live longer.

The United Nations [56] identified a short-solution for these problems 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.” [57:3].

The United Nations report [57] 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 percent 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 concerns over the sustainability of human
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2. Why do 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. It has also become a major driver in generating wealth inequality and the over expansion of the financial sector described by Palley as “financialization” [31]. Likewise, the property rights of corporations allows investors to be overpaid with “surplus profits” [52] 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 by an imaginary expenditure described as “depreciation”. These practices contribute to the seven deadly sins of corporate capitalism discussed below.

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. Each of the above mentions concerns are discussed in the following subsections.

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 one or more real goods and/or services. As a result the price signals created by official currencies that are national monopolies, can distort the allocation of resources to a greater degree than taxes and tariffs from “faulty feedback” signals described by Jacobs [19].

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 five times the foreign exchange they consume while the Eastern States with 90 per cent of the

1http://www.spiked-online.com/index.php/?site/article/3337/
population only obtain 36 per cent ($0.9 \times (1.0 - 0.6)) of the foreign exchange they require. Separately currencies would make 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 and Schwartz [9].

More importantly it illustrates how exclusive/money can seriously distort resource allocation to support the case presented by Hayek [12, 13] 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 [34] 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 [41] described as “neutral money”, Gesell [10] proposed that paper money should only be issued if it depreciated like real goods or required a storage/holding fee. 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 to the US as reported by Fisher [8]. Keynes [22] 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 and Austria 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 self-liquidating locally issued currency.

The Economist [42] suggested that “depreciating currencies” be re-introduced to stimulate economies after the Global Financial Crisis (GFC). Today, cell phones again makes it practical to introduce depreciating money that pays the issuer a regular usage fee or carrying cost. This makes money self-cancelling to force money to be spent rather than saved. As noted by The Economist [44] developing nations are leading the way in using cell phones for financial transactions. There are now more mobile phones in the world than people2 to introduce this form of ecological currency.

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 some times also a tax [40]. Cost carrying money has been the rule throughout history until the duplicity of fractional banking was introduced.

With fractional banking, banks created more notes to deliver grain, gold, silver, etc, than it owned. As the bank only held a fraction of the “hard” commodity backing the currency, this fraud meant that not all notes could be redeemed at once. Like a Ponzi scheme, only the first person to redeem their notes would be able to obtain hard currency unless other investors deposited new hard currency.

The ability of private banks to create credit out of nothing by issuing note to deliver commodities they did not own and then charge an interest rate or storage fee for a commodity they did not hold, exacerbates “financialization”, wealth concentration, inefficiencies and instability in the financial system. Huber and Robertson [17] estimated that if the government instead of banks carried out the creation of deposit money then UK tax collections in 1999 could have been reduced by 15 per cent. The former Governor of the Bank of England, Mervyn King, suggested that the practice of “fractional banking” be eliminated [23]. King [23] 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 financial system are set out in my paper on “How would banking” be eliminated [23].

2http://www.digitaltrends.com/mobile/mobile-phones-world-population-2014/

2.2. The problems of perpetual property rights

Perpetual property rights allow investors to get 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 allo-
cate resources.

In making a decision to invest, a commercial investor
will not rely on the unforeseeable future to recover
their investment and obtain a competitive return. The
foreseeable future is described as the investor’s “time
horizon” [52]. Any cash received after the time horizon
is not required to provide the incentive for the invest-
ment to be made. It represents a surplus incentive that
I describe as a “surplus profit” [50]. 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
analysis are denied understanding how wealth in the
form of asset ownership becomes highly concentrated.
Surplus profits can be very substantial to become
many times greater than the original investment as I
discovered when working as a financial analyst for
one of the largest firms in the world between my
two years a Harvard Business School. More critically,
economic analysts do not have a basis for under-
standing the full cost to communities that host alien
investment. As a result foreign investment is widely
promoted even though it may introduce excessive cost
over benefits from its obtaining “unlimited, unknown
and uncontrollable foreign liabilities” as noted by
Penrose [32].

Another problem with the profits reported by accoun-
tants is that they under-report economic returns. This is
created by accounting doctrines requiring accountants
to describe part of the cash obtained from an invest-
ment as a return of the investment as a cost with only
the remaining cash being described as a profit on the
investment.
The cash described as a return of the investment is
called “depreciation”. This so called cost obscures the
fact that investors are recovering the cost of their invest-
ment. Governments typically allow this artificial cost as
a tax deduction. The tax deduction provided to investors
to recover the cost of their investment has to be made
up by other taxpayers.

Consider an investments being depreciated over ten
years producing a net cash return of 20 percent per year.
By introducing an artificial cost of 10 percent per year
for ten years the reported before tax profit also becomes
10 percent per year. With a 30 per cent tax rate the
reported return becomes a marginal 7 per cent. How-
ever, the after tax cash return to the investor becomes
17 per cent that provides 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 pur-
poses. 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
my other writings [50, 52] 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 it suppliers, employers and customers. In this
way surplus profits could become shared with stake-
holders who participate in their creation. This provides
one way to democratise the wealth of communities and
so nations.
The above discussion explains some of the seven sins
of corporate capitalism. Corporations can be:
1. Inefficient by not distributing to shareholders all
their surpluses. This allows their managers rather
than shareholders and so market forces allocate
their investment funds. It also allows firms to grow
too big to be allowed to fail;
2. Inequitable by over-paying investors with surplus
profits not reported by accountants and not noticed
or understood by economists;
3. Exploitive by not sharing surplus profits with their
stakeholders on whose contribution they depend
for their existence such as employees, suppliers,
distributors, customers and other members of their
host community;
4. Alienating by not sharing power with employees
and other stakeholders;
5. Not directly accountable to all the stakeholders on
which the firms depends upon for its existence and
whose lives are affected by its operations;
6. Non-transparent, hiding the identity of their ulti-
mate ownership and control with owners voting
on a plutocratic basis that provides the wealthy
with the most votes;
7. Degrading for democracy by using corporate
resources to influence politicians and thereby con-
centrating economic, political and social power.

2.3. The problems of private windfall gains from
public investment

Another way in which the current rules of owner-
ship 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. Whatever 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.

As uplift in land/site values are created by the community, 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 stations had been collectively owned by a cooperative of all residents then each resident would receive a windfall gain of around 75,000 pounds. However, this would still be inequitable 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.

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3. Making capitalism efficient, equitable and sustainable

This 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 sought by Jackson [18]. 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 also 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 greater number of people. Because of
this there exists the opportunity of obtaining a politi-
cal 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
[43]. The new institutions created would then pro-
vide 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) [49, 50] and (c) Community Land Banks
(CLBs) [25, 49]. 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 “net-
work governance” that is ubiquitous in nature. Such
is the efficacy of network governance that it sponta-
aneously emerges when society become more complex
and dynamic was reported by Jones et al. [20]. The rea-
son 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 [14]. In other words, as society gets more complex
it requires a requisite variety of complexity in its com-
munication and control circuits as identified by Ashby
[1]. In this way tasks can be sufficiently simplified to
match the limited ability of humans to multi-task and/or
process data [51:245].

Both evolution and the analysis by Simon [39] pro-
vide evidence why 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”
[14] because they represent both “chaos” and “order”.
The academic literature reviewed by Mathews [27]
describes these components as “holons” as the whole
creates more than the constituent parts.

A hierarchy of holons is described as a “Holarchy”
[24]. Holarchies have properties diametrically opposed
to hierarchies. Hock [14] highlighted the difference by
writing:

Industrial Age, hierarchical command and control
pyramids of power, whether political, social, edu-
cational or commercial, were aberrations of the
Industrial Age, antithetical to the human spirit,
destructive of the biosphere and structurally con-
trary to the whole history and methods of physical
and biological evolution. They were not only
archaic and increasingly irrelevant, they were a pub-
lic menace.

The ecological architecture developed by evolu-
tion 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 politi-
cal dependency. The same principle applies to all the
higher levels in the political holorarchy presented in
Table 2. 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 mort-
gage payments. To stop rents and interest leaking out
it becomes essential for communities to establish their
own local currency and minimise any external own-
ership of land, buildings and enterprises. As explained
later, OTCs provide a way to minimise external own-
ership of land, buildings and enterprises. As explained
later, OTCs provide a way to minimise external own-
ership of firms and CLBs provide a way to minimise
external ownership of realty.

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 cur-
rency 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 [19]. Money whose value is
tethered to the retail value of electricity (Kwhrs) gen-
erated from benign renewable energy resources will
be described as Sustainable Energy Dollars (SEDs)
or SZ.
Table 2
Global governance and political economy

<table>
<thead>
<tr>
<th>Level</th>
<th>Principle role(a)</th>
<th>Other role(b)</th>
<th>Source of funding(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td>Personal and social development</td>
<td>Community and cultural development</td>
<td>Work and/or dividends, rents, profits etc.</td>
</tr>
<tr>
<td>Enterprises</td>
<td>Wealth generation</td>
<td>Filling work</td>
<td>Self-financing</td>
</tr>
<tr>
<td>Neighbourhoods</td>
<td>Social &amp; cultural support</td>
<td>Substitution of paid services</td>
<td>Non-profit &amp; voluntary contributions</td>
</tr>
<tr>
<td>Land banks (CLBs)</td>
<td>Income distribution between entities</td>
<td>Health, education, welfare, &amp; other infrastructure services</td>
<td>Enterprise rents &amp; gains from site trades</td>
</tr>
<tr>
<td>Cities</td>
<td>Provide infrastructure</td>
<td>Balance income between CLBs</td>
<td>Taxes from CLBs</td>
</tr>
<tr>
<td>Bioregions</td>
<td>Federating economic &amp; political systems</td>
<td>Co-ordinating infrastructure services</td>
<td>Green taxes from degrading enterprises</td>
</tr>
<tr>
<td>Regional biospheres</td>
<td>Federating bioregions</td>
<td>Co-ordinating economic structures in regional bioregions</td>
<td>Green taxes from bioregions</td>
</tr>
<tr>
<td>Global</td>
<td>Governance of global commons</td>
<td>Co-ordinating political structures in regional bioregions</td>
<td>Green taxes from regional bioregions</td>
</tr>
</tbody>
</table>

(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’ [37]. (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.

Table 3, Existing and Ecological Money outlines how SZ 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. They illustrate how anyone can create credit. But governments and/or banks as shown in row 1 of Table 3 have typically created money. 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 [4]. Parties accepting the notes as money would counter sign the notes to pass the notes on as money. The additional signatures would reinforce the creditability and acceptance of the notes as money. Money was created from the bottom up by what was in fact a mutual credit system. Creditability to locally created notes can also be provided with third party guarantors. The guarantee fee would create a carrying cost as noted in Table 3, rows 2 and seven.

Over the millenniums money has always been a product of nature that incurred storage and/or insurance cost as proposed in the column of Table 3 rows 2 and 7. Cost carrying money reduces the resources absorbed by the financial system because it removes the current incentive to invest in synthetic paper assets as shown in the middle column of Table 3, row 5 rather than in the real economy proposed in the last column of rows 9 and 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. Instead of capturing “unearned income” [11] an incentive is created to invest in what Moulton [28] describes as “… processes by which society expands its power to make nature yield its resource more abundantly”. Moulton describes such processes as being “procreative”. 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. The crucial importance of procreative assets is that they create the only way prosperity can be increased without humans working harder or longer.

Importantly, procreative assets by their nature must become self-financing as they increase productivity and...
Table 3

<table>
<thead>
<tr>
<th>Difference between:</th>
<th>Existing official money</th>
<th>Sustainable Value money ($Z)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Money created by:</td>
<td>Government &amp; banks</td>
<td>Consumers, producers, traders and investors</td>
</tr>
<tr>
<td>2 Interest rates set by:</td>
<td>Central Bank</td>
<td>Cost of risk insurance$^3$</td>
</tr>
<tr>
<td>3 Expansion of money:</td>
<td>Government ratios/regulation</td>
<td>Value of market transactions</td>
</tr>
<tr>
<td>4 Value defined by:</td>
<td>Not defined</td>
<td>Benign renewable Kwhs (Z)</td>
</tr>
<tr>
<td>5 Unit of value</td>
<td>Government fiat</td>
<td>Benign renewable Kwhs ($Z)</td>
</tr>
<tr>
<td>6 Store of value</td>
<td>Yes, subject to inflation</td>
<td>Not a store of value</td>
</tr>
<tr>
<td>7 Integrity of value</td>
<td>Indeterminate</td>
<td>Locally determined &amp; tethered</td>
</tr>
<tr>
<td>8 Integrity of system</td>
<td>Exposed to contagion</td>
<td>Little exposed to contagion</td>
</tr>
<tr>
<td>9 Choice of currency</td>
<td>Government monopoly</td>
<td>Determined by currency region</td>
</tr>
<tr>
<td>10 Inflation control by:</td>
<td>‘Blunt’ policy instruments</td>
<td>Value of renewable Kwhrs</td>
</tr>
<tr>
<td>11 Structure of money:</td>
<td>Unlimited accrual of interest</td>
<td>Carrying cost limiting life</td>
</tr>
<tr>
<td>12 Economic flaw-1</td>
<td>Incentive to own money</td>
<td>Disincentive to hold money</td>
</tr>
<tr>
<td>13 Economic flaw-2</td>
<td>Allocates resources to finance</td>
<td>Real assets more attractive</td>
</tr>
<tr>
<td>14 Economic flaw-3</td>
<td>Distorts price relativities</td>
<td>Prices set by renewable Kwhrs</td>
</tr>
<tr>
<td>15 Financial system cost</td>
<td>Ever increasing</td>
<td>Minimized</td>
</tr>
<tr>
<td>16 Financial assets/real</td>
<td>Ratio increases</td>
<td>Incentive to minimize</td>
</tr>
<tr>
<td>17 Economic growth</td>
<td>Required to pay interest costs</td>
<td>Accommodates de-growth</td>
</tr>
<tr>
<td>18 Social flaw-1</td>
<td>Compounds unearned income</td>
<td>No unearned income</td>
</tr>
<tr>
<td>19 Social flaw-2</td>
<td>Concentrates influence</td>
<td>Localizes influence</td>
</tr>
<tr>
<td>20 Political flaw-1</td>
<td>Concentrates power</td>
<td>Enriches local democracy</td>
</tr>
<tr>
<td>21 Political flaw-2</td>
<td>Low accountability</td>
<td>Cooperative accountability</td>
</tr>
<tr>
<td>22 Environmental flaw 1</td>
<td>Incentive to burn carbon</td>
<td>Favors renewable energy</td>
</tr>
<tr>
<td>23 Environmental flaw 2</td>
<td>No feedback from nature</td>
<td>Nature controls price signals</td>
</tr>
<tr>
<td>24 Ecological feedback</td>
<td>None</td>
<td>Local renewable energy</td>
</tr>
<tr>
<td>25 Sustainability</td>
<td>Highly questionable</td>
<td>More likely</td>
</tr>
</tbody>
</table>


Crucially they provide the ability for society to live more lightly on the planet, by making “nature yield its resources more abundantly” [29]. Investments in procreative assets provide the key to increasing prosperity without consuming more. Because procreative assets are by definition self-financing they can be owned by any one or more individuals who can obtain credit during their payback period. 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 [21] and Turnbull [49:57].

No living thing can exist without processing energy, so electricity generated from renewable resources provides a universal inflation-resisting unit of value. The relative value of the Kilo Watt-Hours (Kwhs) 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 proposed in Table 3, row 6 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.

The value of $Z can be determined by anyone who invests in solar cells, wind farms, hydrogen producing bacteria or other sources of benign renewable energy. Ideally, mutually owned and controlled renewable generators would create the reference unit of value for each community. The generators could be financed by consumers buying their electricity in advance by accepting IOUs issued by the mutual association, owned by the note holders, to deliver specified Kwhrs at specified future times. The IOUs would be negotiable to become the reserve green currency of the community. Ideally also, the local government body or Coopera...
form that could be stored on the Subscriber Iden-
tification card [49]. Another GFC could initiate the sponta-
neous introduction of cost carrying money in another arti-
cle 

However, it is vital to note that $Z would not be redeemable into Kwhrs like Green Money that might be used to finance the electricity supplier. $Zs are only tethered to the retail value of Kwhrs distributed in the currency area. This may include diverse types of renew-
able energy contributed by diverse suppliers who could also be consumer members of the mutually owned sup-
plier. This insulates $Z from being subject to short-term changes in consumption, supply or speculative deriva-
tive trading in energy futures that was the downfall of Enron. Tethering allows the value of supply to be aver-
age out for all types of renewable generators installed by different people at different times in the currency area.

The redemption of privately issued cost carrying money into various commodities was established in Germany in the 1920’s. The idea was promoted by Sil-
vio Gesell [11] so as to avoid the ability of money to make money and thus the rich richer.

Privately issued cost carrying money described as ‘stamped scrip’ rapidly spread through Europe and to the US during the Great Depression because it was so successful in stimulating local communities as described by Fisher [10]. The scrip was issued mainly by individual businesses in Europe. In the US the scrip was issued by a local government authority or by organ-
isations of merchants like a chamber 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 $2 by 2 per cent being 104 per cent to allow them to redeem the notes into official money and leave the issuer 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.

I discuss how many “invisible hands” would support the introduction of cost carrying money in another arti-
cle [53]. 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 [10].

Today, stamp scrip could be created in electronic form that could be stored on the Subscriber Iden-
tity 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. The introduction of cost carrying money, whether in official money or as $Z would provide a way for communities to insulate themselves from another global financial crisis. Self-financing self-
cancelling cost carrying money create the means to build economic lifeboats to float away from control and exploitation of big money central banks. To build the most efficient, equitable and effective lifeboats, com-

Section 2.2 can be ameliorated and/or removed by pro-
viding a relatively modest tax incentive for investors to convert existing corporations to OTCs as explained in the Appendix of my book [49]. OTCs convert investor owned and controlled firms to stakeholder owned firms to provide a basis for introducing a comprehensive form of network governance [51:217].

The modest nature of the concession arises because investors discount twice money that they may obtain in the future. First they discount the value of future money because of the lost opportunity to earn inter-
est 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 than 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 invest-
ment placed at risk. The time required to recover their funds is described as the payback period. As the pay-
back period gets longer the risk of loss gets bigger. The incentive for investors to vote at a shareholders meet-
ing 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 the Appendix of my book [49].

4. When $Z are created by a third party insuring private contracts to allow them to be used as money with part of the insurance cost attached to the contract/currency to create a negative interest rate. Cost attached to the currency could also include a contribution to a redemption fund and/or a verification fee on a decentralized system as referred to in the text.
and updated in my article on Stakeholder Governance [50].

No changes in the law need be required to create OTCs governed by their stakeholders. OTCs create investment shares that last for 20 years. This creates a more level investment playing field between investors in corporations and in patents that may last for twenty years. OTCs also create stakeholder shares that over the 20 years to 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 [31] described as “unlimited, unknown and uncontrollable”. It makes operational sense to include those individuals who can make a direct contribution to the success of the firm such suppliers, employees or customers or individuals employed by suppliers and customers. The identity of each individual and the market value of the contribution of each are recorded in the books of the OTC and/or firms in which it does business. This provides one basis for distributing stakeholder shares. Other ways of distributing stakeholder shares could also be introduced to reduce inequality in society.

Besides being more economically efficient by limiting the export of surplus profits OTCs distribute wealth according to the contributions of its stakeholders. Stakeholder shares would obtain votes on a democratic basis of one vote per person rather than the plutocratic one vote per share obtained by investors. Each class of stakeholder would elect a separate stakeholder council to further and protect their interests and that of the firm as described by Pirson and Turnbull [32]. Firms would then become more 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 as retained profits become increasingly owned by stakeholders.

Firms would grow by establishing offspring corporations taking over part of the assets of the progenitor business. 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 to expand their power and influence by otherwise poorly justified growth. Shareholders, that now includes managers, and have many more investment options than firms and their managers. The result would be the creation of many smaller firms to improve competition, social and political accountability with the features indicated in Table 4.

4. Self-financing urban communities

This section describes how communities can efficiently restrict the leakage 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 [49:65] 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. For example: governments 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. The community precinct would need 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 individual homeowners and individual residential tenants obtain one share in the CLB for each square meter of the site they occupy. As only residents can own voting 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
Table 4

Existing and ecological corporations

<table>
<thead>
<tr>
<th>Feature</th>
<th>Existing corporations</th>
<th>Ecological corporations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Rights to life</td>
<td>Perpetual</td>
<td>Limited to 20 years like patents</td>
</tr>
<tr>
<td>2 Ownership rights</td>
<td>Static and monopoly</td>
<td>Dynamic and co-ownership</td>
</tr>
<tr>
<td>3 Owners</td>
<td>Located anywhere</td>
<td>Mainly local</td>
</tr>
<tr>
<td>4 Creation of corporations</td>
<td>Entrepreneurs &amp; investors</td>
<td>Entrepreneurs, investors and mature feudal corporations</td>
</tr>
<tr>
<td>5 Size of corporations</td>
<td>No inherent limit</td>
<td>Limited by investor’s short-term return on investment</td>
</tr>
<tr>
<td>6 Number of firms</td>
<td>As at present</td>
<td>Many more smaller corporations</td>
</tr>
<tr>
<td>7 Power architecture</td>
<td>Top down</td>
<td>Top down &amp; bottom up</td>
</tr>
<tr>
<td>8 Power distribution</td>
<td>Centralised</td>
<td>Decentralised</td>
</tr>
<tr>
<td>9 Control</td>
<td>Inside out</td>
<td>Inside out and outside in</td>
</tr>
<tr>
<td>10 Competition for control from</td>
<td>External equity markets</td>
<td>Internal agents from network governance</td>
</tr>
<tr>
<td>and/or regulators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Social feedback</td>
<td>Media &amp; managers</td>
<td>All affected stakeholders</td>
</tr>
<tr>
<td>12 Environmental feedback</td>
<td>Some from operational activities</td>
<td>Any concerned stakeholders as well as operational activities</td>
</tr>
<tr>
<td>13 Operational intelligence</td>
<td>Mainly known knowns and some known unknowns</td>
<td>Mainly external that can include unknown unknowns</td>
</tr>
<tr>
<td>14 Motivations</td>
<td>Profits of Mgs and investors</td>
<td>Sustainability of operations</td>
</tr>
<tr>
<td>15 Governance by:</td>
<td>Shareholders in theory but in practice by directors</td>
<td>Competitively and dynamically determined by stakeholders</td>
</tr>
<tr>
<td>16 Regulation by:</td>
<td>By government</td>
<td>By stakeholders and so by local requirements</td>
</tr>
</tbody>
</table>

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 dwelling 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 CLB share 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. CLBs provide 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 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 public pension and medical insurance. As CLBs have a comprehensive integrated involvement in all aspects of community life at the neighbourhood level, they are well placed 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 reality are considered in the next concluding Section.

5. Building sustainable communities

The type of society that would emerge by introducing ecological property rights to money, firms and reality is outlined in Table 1. 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.

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 [3]. 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 it practical to introduce an alternative to electoral politics as described by Martin [28]. The selection of decision makers by lot instead of votes is described as “demarchy” [3] – refer to the second last row in Table 1. 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 process 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. This practice has been adopted 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. Economists focus on markets and private hierarchies. Social relationships are also governed by: families, networks, associations and government as identified by Hollingworth [17]. Each of these six co-ordinating mechanisms has strengths and weaknesses but each can be used in various combinations as found in various societies over history as indicated in Turnbull [51:276–7].

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 illustrated in my PhD dissertation [51:130]. 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. Reduced consumption may well be forced upon society. Trainer [41–44] anticipates this possibility with his compelling arguments for adopting a much more frugal lifestyle. But ecological capitalism facilitates increasing leisure and the quality of life and so prosperity even with degrowth in consumption per person with a declining population.

6. Conclusion

The Trainer analysis leads to the conclusion that a sustainable society that protects and nurtures the environment for future generations may only become
possible with a much smaller global population. The contribution of this paper is that it has identified a new type of capitalism that can promote a sustainable society on a politically attractive basis. Importantly this response to the research question makes it politically and economically attractive to encourage both de-population and de-growth to create a virtuous re-enforcing process transform and sustain society for future generations in perpetuity.

References


