Creating a 21st Century Sustainable Society and Built Environment in Northern Australia.

Issues Paper for Address and Workshop to Launch of Centre of Excellence in Tropical Design (CETD)

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Introduction.
The launch of a Centre of Excellence in Tropical Design in Townsville is a recognition that successful and sustainable living in the tropics requires:

- The creation, acquisition and utilisation of tropical knowledge about the true tropics, the monsoon tropics/ tropical savannah and the tropical arid environments,
- What is required to ensure that these environments are sustainably utilised for human use, and what is required for humans to live successfully, healthily and sustainably in these environments.
- Designs and innovations which lead to the creation of the products, services and technologies which enable humanity to live successfully, healthily and sustainably in the tropics. Most of these have yet to be created, and there are wealth-creating opportunities for those who create them.

Design is one of the most powerful tools humanity has to shape the future. This becomes apparent if one considers the fact that the design based professions include engineering, architecture, industrial design, all kinds of planning (including urban, land use, transport, natural resource and social planning) and production planning such as design crop rotations planning and school curriculums. Good design integrates various entities into a coherent whole, preferably resulting in synergistic outcomes while avoiding antagonistic outcomes.

One of the major roles of a Centre for Excellence in Tropical Design could be to develop the design principles and practices for use by all the design based professionals who work on shaping the future of tropical environments and human settlements . The result could be that design based professionals 'sing from the same song sheet' in terms of shaping this future.

The Future of Northern Australia.
Northern Australia is the only section of a developed country in the tropics, apart from southern Florida and Hawaii. By the year 2020 Northern Australia could be, and in my view should be, an exemplar of sustainable living and sustainable prosperity in the tropics: if it aspires and deliberately sets out to achieve this goal that is. It won't happen without a clear act of choice. The future is part chance and part choice. We need more choice and less chance in our decision making than we have had hitherto.

More than 40% of the Earth's peoples live in the true tropics, monsoon tropics/tropical savannah, tropical arid and the sub tropics. This is a huge market of people who could be your future customers. They will want access to the know-how required to achieve first world prosperity in the tropics, and doing it without creating collateral damage to their tropical environment and without reducing the capacity of future generations to maintain and further grow this prosperity. This is an opportunity for Northern Australia.

Success will now go to those who get to the future first. Seventy percent of the products and services of the year 2025 have yet to be invented. Prosperity will go to those to create them first and best and provide them for global markets.

It is possible to know now what the markets of the year 2020 will want. The values of 2020 will determine what people regard as valuable in the year 2020. What they will regard as valuable they will want more of, and this will inturn create 2020 markets, and products and services.

At present there are few who would claim that Northern Australia is already getting to the future first. Northern Australia must commence looking inward as well as forward, showing insight before foresight. Insight will help Northern Australia to identify its destiny, and then foresight will assist it to realise its destiny in a world of emerging opportunities and possibilities. Today I want to show how I think Northern Australia can achieve it.

Northern Australia can get to the future first if it crafts its way to sustainable prosperity by the year 2020: if it learns how to live successfully, healthily and sustainably in the tropics, and creates wealth for itself and others through the sale of exports of products, services and technologies based on local designs and innovations . So far nobody knows what is involved in making such a journey, but most of us would agree that it would be highly desirable journey to complete if we know how to do it.

To make this journey to sustainable prosperity Northern Australians would need to develop a shared vision of what a sustainable and prosperous Northern Australia would look like. Then they should develop a coherent strategy outlining the respective roles of governments, corporations and communities in the realisation of this vision, and sufficient resources, material and human, must be made available to enable it.

Northern Australia is generally regarded as one of the *last frontiers*. Many still see it as a place which is lagging behind Southern Australia in its journey into modernity. This has been the case for much of the last 100 years. In reality it is currently developing in a way which more similar to Indonesia and China than Southern Australia, and the form of development is not as sophisticated as some developing countries to our north such as Singapore's *Intelligent Island*, or Malaysia's Multimedia Corridor.

It is my view that if this *last frontier* self image persists it could become a major impediment, which will prevent the transformation of Northern Australia into a 21st century success story. A new mindset and a changed consciousness is needed: one which will change Northern Australia from the *last frontier* where old developments happen last, to the *new frontier* where new developments happen first.

If it is to achieve sustainable prosperity in the 21st century Northern Australia must leave behind the view of itself as a *last frontier* society. It is partially disappeared, but many traits of it remain. A *last frontier* society continues to believe that *progress* requires that indigeny is assimilated and hostile environments conquered, and where wealth comes from beneath ground or off the hoof rather than from between the ears. This era is over and to continue on with such old and outdated mindsets and strategies can be disastrous for a knowledge based industrial structure is now needed for 21s century success.

There is considerable current discussion about the need to develop the 'new economy' in Australia. The' new economy' means a great deal more than IT and communications technology. It involves building 21st century industries and enterprises first and best. The challenge of getting to the future first is to ensure that many of these are established in Northern Australia in the next two decades. And to do this the government must lead and create the political and economic/cultural climate to engender to make such a historic transformation possible. .

Design and Innovation for Sustainable Prosperity in the Tropics.

If Northern Australia wishes to build a pathway to sustainable prosperity and then export the know-what and know-how elsewhere, then it has to promote the development of an innovation culture. There are two kinds of designs and innovations. I call these 'problem-centred' innovation and 'mission-directed' design and innovation. Problem–centred design and innovation involves finding new and better ways to do old things. Mission-directed design and innovation involves doing new things first. In over managed and under led

Australia we are good at the first and poor at the second. We are an 'old economy' because of this. Our currency is devalued because of this, and it won't improve until be do more new things first, that is get to the future first. This is really what the 'new economy' means, which is something which most of our politicians don't seem to understand. Innovating 'sustainable prosperity' for the tropics and subtropics is a new 'new economy' kind of journey. To many people the words 'the new economy' involves one group of innovations, namely current IT and communications technology. Pretty soon IT will become the 'old economy' and the "new economy' will be KT and WT (knowledge technology and wisdom technology). The 'new economy' actually involves creating and marketing any new innovations which emerging markets will want in increasing abundance.

If we are to design and innovate our way to sustainable prosperity in the tropics and sub-tropics we need to consider two categories of innovation. One group is related to the process of innovation itself. I call these *capacities* and *capabilities*. These serve to improve the ability of enterprises to complete a task irrespective of whether it involves problem-centred or mission –directed design and innovation. *Capacities* refer to additional resources such as financial and technological resources which are identified and utilised to improve the success of the mission. *Capabilities* involve improving the human resources element, the skills, knowledge and experience of people —both as individuals and as a collective—so that they are able to perform at a higher level

The second group are the products of the designs and innovations, which are needed to develop to reach a goal . These consist of two major forms: *ways* and *wares*. *Ways* are what we do to achieve an outcome. *Wares* are what we use to achieve an outcome. Design can create the templates needed for the creation of both *ways* and *wares*. Innovations can be either :

- Social innovations which can enter the market as *ways*.
- Physical innovations which can enter the market as *wares*.

Different *ways and ware* can be developed for different strategic purposes and their development will provide opportunities for the innovative and enterprising. For example, the ways required to realise an ecologically sustainable future can be called 'green' ways, while the ware for the realisation of a sustainable future can be called 'green' ware. Likewise, we can have health ways and health ware, mediation ways and mediation ware, learning ways and learning ware, and so on. Each of these groups can be further broken down into more detailed categories. Health ways and health wares can be in turn broken down into those to treat illness, which I call healing ways and healing wares, and those which promote health which I call wellbeing ways and wellbeing ware. These can be further divided into more specific innovation groups. Green wares can also be broken down into many others .For water management for example we can have water conservation ways and wares, water restoration ways and wares, and catchment management ways and wares.

An innovation culture develops a nation of job-makers rather than job-takers. For more than a hundred years a central goal of the education system has been the creation of a nation job-takers who for most of this century were meant to be docile and uncritical takers of orders. The word 'training' is an anachronistic remnant of this culture: a trained person was, for the most part, taught to do rather than think. Education has produced many people who were 'trained' for jobs in a system which placed much emphasis on vocational 'training' and not enough emphasis on generic skills for personal and professional development. Much of the education system still does this. In a world that needs more innovations and innovative enterprises to shape the next century and service 21st century markets. This requires a major emphasis on job-making. This is not just a task for governments and business leaders, this is something that should involve everybody. It is people—all people—who need to recreate themselves as job-makers. It is the role of governments and business leaders, and every other leader, to ensure that the art and science of job-making becomes a central core of cultural development.

The 21st Century Sustainable Society.
If humanity is to live on this beautiful planet of ours indefinitely, we must design and innovate, and within the next generation or so, the means of creating sustainable global society, and we must complete a mission to realise it. Whether or not you are able to visualise a sustainable society, you know that we need to realise one . It is an Apollo Mission for the planet. A sustainable society is one which is able grow, develop and change, while it operates within natural laws and constraints, and does not undermine future opportunities and equity. From my work I have come to the conclusion that we have achieved, since about 1960, perhaps fifty percent of this journey. We should reach the destination by about 2025. If we don't the planet and its peoples will pay a high price for not achieving it. The journey to a sustainable society also involves the realisation of sustainable prosperity, which involves the simultaneous advancement of four forms of prosperity: economic, ecological, social and cultural.

To create a sustainable society we must be able to imagine it, model it and understand how it would behave. We cannot work to create a future which we do not first imagine, and we must be able also to imagine how a sustainable society would function through the creation of appropriate metaphors and models. These metaphors and models enter the world as designs. We must also be able to measure our progress towards the realisation of a sustainable society through the creation of appropriate indicators and assessment processes. Finally we must innovate many new innovations, products, services and technologies, the *ways and wares*, to market to the world's peoples to provide the tools, which would enable them to make this heroic transformation on the ground.

The designs and innovations we will need to create should not only make us less unsustainable but more sustainable. We must be what I call mission directed rather than problem centred in our strategic thinking and practices. To treat illness and to cease to be sick is very different to creating health. To lessen a bad outcome is not the same as creating a good outcome. To improve the efficiency and effectiveness of the fossil fuel engine, to lessen its impact on climate change is not the same as creating a hydrogen powered alternative which abolishes the impact all together. To reduce waste is not the same as abolishing waste. We know intuitively that a sustainable society will be. It will be a society where, amongst other things, human induced global warming does not exit and the concept of waste is abolished. It will be a society where production, consumption, development and lifestyles are sustainable. All of these outcomes pose both challenges and opportunities for our most innovative selves.

We need to also create many new means to measure our progress. For example, , we need a true partnership of economics and ecology in the provision of indicators if we are to assess whether we are achieving economic and ecological prosperity, as win-win rather than a win-loss. We must be able to measure whether we are able to simultaneously creating economic prosperity while creating ecological prosperity or whether we are still continuing the ways of the Modernist past by creating economically prosperity at the expense of creating ecological poverty. Our economists must incorporate the value of natural capital, and of environmental services provided by nature, such as the production of clean water, or the pollinating roles of insects and birds, into our measures of prosperity. This will achieve real progress in our capabilities to measure prosperity in all its forms, including in concepts such as the 'triple bottom line', or as I would prefer, the 'quadruple bottom line '.

Sustainable Regions and Communities.
Within this sustainable global society we must also create sustainable regions and communities, with the sustainable human settlements and with the sustainable use of the natural resource base of land, soil, water sea and air. This will also take a generation to achieve. Presently there are no existing route maps to guide regions to a sustainably prosperous future. The old mechanisms which relied on tariff walls to remove competition, the subsidisation of rural enterprises and industries to create advantage, government intervention to relocate government enterprises to regional centres, and protected labour markets are, in most cases, no longer possible in a world of globalisation, the WTO, open markets, zero tariffs, smaller government and national competition policy. We need to create new mechanisms to create sustainable prosperity in a globalising world where governments are becoming less powerful and, international organisations, corporations and communities are becoming more powerful. The pathways to create a sustainable society with sustainable regions must be charted and then built. Those who chart and build these pathways, and who create

the intellectual property and innovations to do it, will be able to export this know how to the world and reap significant commercial benefits from doing so.

A successful design and innovation strategy effort to create sustainable prosperity in the tropics will require the assembly of the world class expertise in tropical knowledge, entrepreneurship, designer, innovation, manufacturing and marketing: in essence a world class cutting edge industrial cluster in tropical knowledge, design and innovation. The new CETD is only one component of such an industrial cluster.

In the case of creating a sustainable agricultural sector we should concentrate on rural communities. These are often part of the problem rather than part of the solution. Rural communities everywhere generate their wealth by the means which are disturbingly similar to the means which generated wealth a hundred years ago. Most of the new industries which were born in whole of the 20th century were born in the big cities, which have thrived because of this. Now with the new connectivity and with access to continuing learning and 21st century knowledge, rural communities can combine 21st century urban economies with rural lifestyles. They can become apart of a global society without moving to the city . However there must be a commitment to getting to the future first in terms of establishing 21st century industries and enterprises: indeed much of its 21st century industrial base should be based on nurturing this ecological, social and cultural heritage.

Over the last year I have worked with several rural communities which are aspiring to get to the future first. The Tumut Shire Council in NSW has decided to create sustainable prosperity for itself including through a developing a 21st century industrial base. This shire occupies a complete beautiful river valley, the Tumut River Valley surrounded on three sides by national parks and state forests. By the year 2013 this whole river valley will be transformed into an organic region, and every product of agriculture and horticulture, which leaves this shire for world markets, will be organically grown. This is what purchasers of food in the 21st century increasingly will want; clean green food, free of contamination and grown by sustainable production processes. The action plan for the creation of this organic future is currently out for comment and will be presented to the Tumut Shire Council in a couple of weeks.

The Atherton Tableland is another example. I worked with this region to assist it chart its journey to becoming a sustainable region in the tropics by the year 2025. As most new designs and innovations are created in temperate zones and they often are unsuitable for tropical environments, the challenges and opportunities are great and exciting.

Creating Sustainable Prosperity

- *Sustainable Regions* are regions which have achieved *sustainable prosperity*

- *Sustainable prosperity* is a combination of, a fair and reasonable balance between, and a maximisation of each of, four forms of prosperity*: economic, ecological, social and cultural prosperities*

For each we can have both prosperity and its opposite, namely, poverty

To create economic prosperity while creating ecological poverty (eg by logging a forest beyond its regrowth capability and the therefore creating ecological poverty) is not creating sustainable prosperity. Or closing down a logging operation to create ecological prosperity, without suitable transition arrangements, and therefore contributing to social and economic poverty, is not creating sustainable prosperity.

To create economic prosperity through building a profitable mine in Northern Australia) and increasing social prosperity (eg through increased access to social mobility and opportunity, and through increasing community cohesion) while at the same time decimating an indigenous culture and creating cultural poverty, is not creating sustainable prosperity.

- *Economic prosperity* involves the location of emerging 21st century industries in communities. Seventy percent of the industries, products and services of the year 2025 have yet to be invented. New forms of connectivity means that we can now locate many emerging 21st century industries in rural communities.

It also involves increasing the collective bargaining power which rural communities have with the external world.

- *Ecological prosperity* requires the development of innovations and practices to live within perpetual solar income, turn waste into food, avoid and repair collateral damage to the environment, avoiding excess or supplying nutrients/inputs at just-enough-in-place-and-time (JEPT), and nurture biodiversity.
- *Social prosperity* improves when rural communities enhance social cohesion and conviviality, and facilitate increased access to and opportunity in, learning, healing and wellbeing services.
- *Cultural prosperity* increases when communities nurture and celebrate cultural heritage and diversity, and increase intercultural tolerance, respect and harmony.

Distinguishing Ends and Means: the example of Sustainable and Organic Agriculture

Justus Von Liebig, one of the greatest chemists of all time, produced soluble chemical fertilisers in 1840. John Bennett Lawes patented superphosphate in 1842. The world of agriculture and horticulture was then transformed by the chemical fertiliser revolution launched by these two giants of applied chemistry.

The revolution took another quantum leap as a result of the use as pesticides of chemicals which were largely developed for chemical warfare purposes in World Wars 1 and 2. The Swiss chemist Paul Muller discovered the insecticidal properties of DDT, the first organo-chlorine insecticide, in 1939. German scientists working on the development of new nerve gases in World War 2 synthesised Parathion, the first organo-phosphate insecticide, which was first marketed as an insecticide in 1943.

This agro chemicals revolution produced both simpler production regimes and huge production gains, and swept all before it. Until Liebig horticulture and agriculture required an understanding the complex nature of soils as a combination of physical/chemical and biological systems which cooperated to transform insoluble minerals so that they could release soluble nutrients just in time for their uptake by plants. The agro chemical way reduced the role of soil from this complex physical/biological system to one which became a physical support and water supply system for plants, to which water soluble nutrients were simply added from a bag. The hubris of the scientific culture behind agro chemical production was astonishing. It labelled as ratbags and Luddites those who did not accept this gross over simplification of production. These same people sought to retain and further improve the complex biological driven production systems of the pre Liebig heritage. In this they made gains but they generally couple not match the productivity gains of the post Liebig era.

Commencing with Rachel Carson's book *Silent Spring* in 1962, we began to recognise the large collateral damage to the environment, to soil, water and to biota and people caused by this agrochemical revolution. The huge production gains from agro chemical driven production have come at a great cost. We now know that over the next generation we must invent our way to what we now call *sustainable agriculture and horticultural production*. Most of us may yet not be able to visualise what sustainable production will look like but we do know that we must blaze a pathway to it with a generation.

Sustainable productions involve simultaneously combining the best of both the pre and post Liebig production systems. We want to retain both the production gains of the post Liebig era and the natural sustainable production systems of the pre Liebig era. This is a heroic journey of design, innovation and advocacy: it is both a challenge and opportunity. Those who find new ways and means to create the new 21st century sustainable agriculture and horticulture will become as significant in the 21st century as Justus von Liebig was in the 19th century. They will also to do economically well by designing new ways and means to do ecological good, for the world will want to buy these innovations.

This 21st century sustainable production regime will require many new designs and innovations. These designs and innovations for sustainable a production includes new ways and means to: avoid collateral damage to the environment, live within perpetual solar income, turn waste into food, and protect biodiversity.

This historic transformation of agriculture and horticulture would not have been possible with out a dedicated band of true believers in organic agriculture: those keepers of the pre Liebig heritage who have kept the flame

of organic production burning while the rest of us were overwhelmed by the agrochemicals juggernaut. Many of these people are in this room.

Are organic agriculture and sustainable agriculture one and the same the same? For me the creation of a sustainable society is the destination we are seeking. Sustainable agriculture consists of four elements namely sustainable production, consumption, development and lifestyles. Each of these are destinations which will require many new innovations to be reached. Organic agriculture to me is a means, albeit an important means for its realisation. It is not an end in itself. It is source of knowledge for the realisation of sustainable production. It should always be the state-of-the-art , a moving frontier of knowledge, a work in progress. There are yet many new innovations which must be created and marketed if our sustainable destination is to be reached.

The Values of a Sustainable Society: the Birth of Planetism

The more we can anticipate what will happen and the more understanding why the future is unfolding the way it is, the better. I already said the world is part chance and part choice. Our choices are based on both insight and foresight; on who we are, our destiny, and on seeking to understand emerging possibilities, opportunities and threats are emerging so that can position ourselves for thrival and thrivability. The more we maximise choices the more we minimise the role chance will play in our future. Of course we are not omniscient and omnipotent, and we always have to be adaptable and responsive to an unanticipated change. However there is more that we can do to position ourselves to ensure future success and become more effective at making a difference than the think.

We can understand what is unfolding through a process of what I call *Values Probing. If we know what the major values of 2020 will be, in turn know what people will value and find to be valuable. What they find to be valuable they will want more of, what they want more of will define what is made, bought and sold. And these same core values will define what is virtuous and ethical in human behaviour.*

Much of my work is spent on trying to understand how collections of value, or paradigms, are changing. To understand these emerging values means that I must walk out into the future in my imagination. As I was originally educated to become a scientist, a biochemist, this involves using the scientific method: construct hypotheses of what is likely to happen, then to made predictions of what might happen and then test out prediction through an experiment This way I find if my hypothesis wrong or not.

I have now developed a whole hypothesis about the emerging paradigm called *Planetism* , which I test daily in my interaction with others. I don't get verification whether I am right or not , but I learn from others whether or not my hypothesis makes sense from the point of view of how they see the world helps them understand the emerging future from their own pint of view. Planetism the planetary version of nationalism, it involves having first allegiance to the planet.

In the following analysis I outline what I believe has happened to our planet and its peoples over the last 20 years, and what will happen to them in the next 20 years.

The recent war in Iraq an the ongoing resistance by some Iraqis, including the bombing of the UN HQ in Bagdad, the Bali bombing, and the terrorist outrages in New York of 9 September 2002, have made many people think that the world is charting a new and dangerous course. Actually I think these events represent a speeding up of long term trends which were already well under way. These are just examples of the true globalisation of our concerns and aspirations, and the demise of the relative power of the nation state. Let me explain.

There are three major global forces, which collectively are shaping our future: namely Globalisation, Tribalisation and Technological Change. Globalisation is the increasing interconnectedness, and the increasing awareness about and concern for others including those we don't even know. It is driven by increasing trade between people in different parts of the planet. Trade has now become a weapon, which is used to punish the planetary wicked. A trade ban on a recalcitrant rogue state (eg Iraq, Burma, Afghanistan under the Taliban), or a global consumer boycott on a rogue company, is now common and is increasingly more so. If these entities are breaching global ethical values this means that there is now something emerging

we can call *global public opinion*. This is something which is totally new. If there are disagreements between nations these are usually about means rather than ends For example most agree that we must collaborate to slow and stop climate change, confront a rogue government, manage the refugee crisis, or remove trade barriers , but we disagree on the means and about the urgency/priority of doing it .

And, more than ever, we feel free to intervene in the internal politics of other countries. Most of us thought that General Pinochet should be punished for his actions even though these were exclusively dome within the borders of Chile .If Chile would not try him , we felt that he should be tried elsewhere , Similarly with Slobodan Milosevic, Saddam Hussein and perhaps Robert Mugabe also: time will tell . Rogue states such as the Taliban Afghanistan, North Korea and Burma (Myanmar) will be punished for the threat they represented to others outside their national borders. It is now acceptable to punish the planetary wicked. Wherever they are.

Our political commentators now draw attention to inconsistencies in behaviour. For example the US President George W Bush has a problem of credibility with many people when he asks others to collaborate with the USA to remove the Iraq's president, but will not cooperate with others to advance the work of the International Criminal Court or the Kyoto Protocol, or seeks exception to WTO rules to protect a particular industry at home. Such inconsistent behaviour is widespread. This very inconsistency means we now have a view about what constitutes global ethical behaviour.

Informing this is a set of values, which enables all of us to recognise that these inconsistencies exist at all, and which asserts that down the track, we all must all become more consistent. We all recognise that while we might be able to postpone collaborating with others on an issue we don't support we cannot stop this collaboration indefinitely. What are these values, which are informing this global public opinion, what is this emerging global paradigm?

The recognition that we share is that we are condemned to coexist on a small blue and white planet, which we first saw in a photograph from Apollo 8 in 1967, what R. Buckminster Fuller called *Spaceship Earth*. This increased inter-connected world is being facilitated by the revolution in communications and information technology.

There is a greater emphasis on the building of relationships, and on cooperation as well as competition.

The new way to success is what the Japanese call 'co-opetition', cooperating and forming alliances to compete more effectively.

Many organisations, both commercial, and humanitarian, are all anxious to parade their wares and participate in the excitement of dancing on a global stage . Amnesty International is as much a 21st global organisation as Microsoft. Both want to be effective everywhere. And the early 21st century is increasingly featuring a new entity, which has not existed before, the small business transnational company, which sells its products and services everywhere via the Internet. You don't have to be big any more to have global reach.

The global financial system is evolving rapidly. Increasingly there our national currencies are weakening, and we trade in US dollars, euros and Yen. How long will it be before we have only one currency and national currencies disappear? Perhaps in 20 years. And to have only one international currency will kill of all the speculation based on the value attributed national currencies. Those who treat the international financial system as a casino, such as hedge funds, have only a decade or so to ply their trade.

The newly interdependent global financial system is vulnerable not only to pirates and speculators, but also to the flow on from a financial meltdown in one country, such as Argentina, to others, , just as a just-in-time interdependent manufacturing system is vulnerable to a strike, act of terrorism or natural disaster. The more interdependent the system is, the more efficient it is, but the more vulnerable it is also to sabotage, corruption, piracy, or natural disaster.

The changes after 11 September 2001 and the acts of terrorism in Bali, which were being aimed at cutting the financial supply lines to terrorist organisations are also making life more difficult for others such as drug barons, money launderers and speculators. It is getting much harder for criminals of all kinds, in companies, NGOs and national governments alike to move money undetected. There will also be guidelines for the management of short-term capital transfers such as those initiated by hedge funds, there will rules for the prevention/containment of corrupt behaviour by people involved in capital transfers. Some short term transfers of capital, which have nothing to do with wealth creation in recipient countries, but a lot to do with the wealth creation of the currency speculators will be either banned, or rigidly controlled and heavily taxed.

A global trading system is being born through the GATT Uruguay Round and the World Trade Organisation (WTO). The first stage is now complete. The Doha round commenced last year . In the next few years further agreements to ensure that international trade does not reward traders who plunder the environment and exploit labour will be enacted through the WTO. The WTO is now discussing the drafting of rules to prevent nations and companies from gaining an economic or trade advantage through the exploitation of human labour or despoiling or inadequately protecting the environment are now being negotiated will be agreed to in the next few years.

It is certain that the reaction to the international financial destabilisation caused by hedge funds in mid 1998 is a significant reason why the negotiation of the MAI was postponed but not abandoned. The need for complete global financial reform has never been greater. The newly interdependent global financial system is vulnerable to pirate actions such as those by hedge funds, just as a just-in-time interdependent manufacturing system is vulnerable to a strike, act of terrorism or natural disaster. The more interdependent the system is, the more efficient it is, but the more vulnerable it is also to sabotage, piracy, or natural disaster. There is now recognition is that a much bigger agenda of reform of the worlds financial system is now necessary. Any new negotiation will encompass all the issues which were components of the now postponed MAI (Multilateral Agreement on Investment) negotiations. It will also provide guidelines for the management of short term capital transfers such as those initiated by hedge funds, it will ensure the protection of labour rights and environmental protection, it will provide rules for the prevention/containment of corrupt behaviour by people involved in capital transfers including politicians in capital recipient countries. Some short term transfers of capital which have nothing to do with wealth creation in recipient countries but a lot to do with the wealth creation of the currency speculators will be either banned, or rigidly controlled and heavily taxed The new financial arrangements which will be negotiated in the next few years will define the limits of national sovereignty in the 21st century, which is really the balance between national government individualism and global communitarianism, between independence and interdependence. These are only parts of the rapidly evolving infrastructure of international trade and economic cooperation which is creating a single planetary wide market place. The small business transnational corporation, which would have been impossible a decade ago, is a reality today. Anybody who creates a new product or service will want to market it all over the world, not just into a small domestic market.

A new International Criminal Court has been formed. It first will concentrate on providing a venue to try people who commit crimes against humanity. In the near future other categories of crimes will be will be added, such as crimes against nature.

At the same time, a new planetary environmental order is being realised through the Montreal Protocol (relating to the phasing out of ozone-depleting substances), and the outcomes of the 1992 Earth Summit, including the Conventions on Climate Change and Biodiversity, and subsequent meetings Climate Change Summits such as the now famous one in Kyoto. New International agreements on environmental matters are being added to global administrative infrastructure every year. The 2002 World Summit on Sustainable Development (WSSD) in Johannesburg consolidated these issues, Even though some called the WSSD a failure, a result of the WSSD was the accession of Russia, China and Japan to the Kyoto Protocol, and as a result the Kyoto Protocol is now a legal entity.

The World is also being united by ecologically driven fear - fear of global ecological disaster. For centuries fear has divided humanity. Now it is beginning to unite it. Fear, traditionally a force which prevents change and reform, is now becoming a major factor in encouraging cooperation, change and reform. The fear of unpredictable climatic change and an ozone-depleted atmosphere is forcing people to think 40 years ahead, and to cooperate on an unprecedented level.

Finally, a new planetary security system is also struggling into existence. In 1946, Australia's Foreign Minister, H. V. Evatt, played a leading role in the development of a United Nations Charter which gave the United Nations the responsibility of playing the role of both planetary peacemaker and peacekeeper. The Cold War prevented the United Nations playing the peacemaker role totally, and severely restricted its peacekeeping role. Machinery to permit the UN to fully play these roles have yet to be established. Meanwhile, the UN has started to act in an *ad hoc* way. The UN's slow responsiveness and indecision has resulted in other solutions being organised to undertake similar tasks such the taking of unilateral action by

'the coalition of the willing' in Iraq and even more recently the development of an interdiction force to intercept WMD carrying ships leaving North Korean ports. Some of us might not approve of the US means of taking on Saddam Hussein but we all share the same view ,that the world would be better off without him. The failure of the world to come to deal adequately with the ugly realities of Bosnia, Kosovo, Rwanda, and East Timor has reinforced the need for the creation of effective global peace-making machinery. In recent times the increased world disapproval of the military regime in Burma and the Military dictatorships in Zimbabwe, Sierra Leone and Liberia should be noted. Dictators are becoming automatic global pariahs and we regard it as our planetary duty to work for their overthrow even if they are not directly threatening us.

The exemplar of international community building is the European Economic Community (EEC). The EEC now embraces all of Western Europe except Switzerland and Norway. Ten counties in Eastern Europe joined in May 2004, and more will join in 2007. The Slovenias and Latvias of Europe have recently shifted from a status of dependence to that of independence. In the next few years they will seek to become part of an integrated European Community, just as Luxembourg has been for many years. Other nations in Eastern Europe such as Bulgaria, Rumania, Turkey and Albania will follow. The peace making power of economic integration can also be seen in Europe. The prospective benefits of joining Europe is seducing people who have been traditional enemies to cooperate. A prime example of this are the Turkish and Greek communities in Cyprus who in early 2004 agreed to bury decades of hatred so that Cyprus could join Europe. Without such an accord, the accession of Cyprus would have stalled, even though the Greek part of the Island was of the view that it could join alone. One can imagine the level of illegal trading which would have occurred across the Greek/Turkish border in Cyprus if only one part of the island joined the EEC. Similarly the application by Turkey to join Europe has been held up by the dismal Turkish human rights record, particularly toward the Kurdish people. This demand is now driving major changes in Turkey. These countries will soon be followed by entities which have as yet no national status such as Catalonia, and Scotland. These people can have both the benefits of enjoying their tribal separateness while gaining the benefits of union. They are happy to treat Brussels as their Capital , but are less willing to treat Madrid or Westminster respectively as their capital .This would give a Barcelona and Edinburgh the same status as London , Paris or Madrid .

The emerging greater Europe is a product of both tribalisation and globalization. Many parts of the former Soviet Union such as Georgia, Moldova, Ukraine and Byelorussia will partake in the next phase of European Integration. . What they will be required to do in the meantime is manage their affairs so that they are able to conform to the strict financial management, governance and human rights entrance requirements for joining the EEC. This is the civilizing power inherent in political and economic integration. It is possible that by the year 2010 Europe will spread from the Atlantic to the Ural Mountains.

Tribalisation will create many other new national entities in the next decade. Soon the list will be added to by Makulu, Aceh and Irian Jaya as the Indonesian (Javanese) empire breaks up, and by Tibet as the first stresses are placed on the Chinese (Han) empire. It is important to remember which side global public opinion supports in such conflicts: it always favours self-determination by the seceding entity.

In North America, economic union is an established reality. The leaders of the USA, Canada and Mexico have implemented the North America Free Trade Agreement (NAFTA), which was the first stage of the creation of a single economic community, "from Alaska to Argentina" to quote President George Bush Senior. In South America the Mercusor Agreement creating a common market between Brazil, Argentina, Paraguay and Uruguay which has now been operating for several years. In Central America the Central America Free Trade Agreement (CAFTA) links Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua. Chile and Peru also have a bilateral free trade agreement.

A meeting of leaders of the Americas in Monterey, Mexico in January 2004 committed 34 countries in the Americas to negotiate the formation of a free trade zone by the beginning of 2005. It will be a big free trade zone , with 800 million people and a regional GDP of 13 trillion. As the US accounts for 10 trillion of this, care will have to be taken in the negotiations to ensure the process of negotiation does lead to the creation of a 21st century US virtual empire The path to achieve this will not be easy . It will require the USA to reduce its farm subsidies and open its markets to produce for other countries in the Americas, and in an election year. Some Latin American countries want a specific commitment to reduce poverty in Central and South America fearing that the expected increased economic prosperity will not be delivered fast enough, while the USA

want to prevent corrupt governments from benefiting for membership, presumably referring to governments which might be tied to the drug trade.

In the Asia/Pacific, the Bogor Declaration in 1994 committed the APEC region to complete economic and trade integration by 2020. The ASEAN group of nations is committed to total economic integration within 5 years. This links Cambodia, Burma, Malaysia, Indonesia, Thailand, Vietnam, Laos, Philippines, Brunei and Singapore. In South Asia a meeting of South Asian leaders in January 2004 established a program to create a South Asia Economic Community by 2005. This includes India, Pakistan, Bangladesh, Nepal, Sri Lanka and the Maldives. In North East Asia, the development of free trade zone between Japan, China, Taiwan, the Republic of Korea and of North Korea will proceeded when the North Koreans decide it is time to come in from the cold. If they stay aloof they will pay high cost of being left out. Australia and New Zealand have had a free trade zone for more than a decade. Recently both have signed a free trade agreement with Singapore, which is the first stage of bringing the CER free trade agreement which links Australia and New Zealand, and ASEAN together Australia has also just completed a free trade agreement with the USA and Thailand, and is now planning an agreement with China. This is the bilateral process at work. As well there is continuing multilateralism. In Santiago, Chile in November 2004, APEC leaders committed themselves to the completion of the Doha round of the WTO

A new International Criminal Court has been formed. It first will concentrate on providing a venue to try people who commit crimes against humanity. In future other categories of crimes will be will be added, such as crimes against nature. For example is the killing of a pod of blue Whales or polluting the Danube River with cyanide as serious a matter as the murder of humans in Bosnia or Rwanda?. Many people would say yes to that question

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At the opening of the Atlanta Olympics there were 197 nations present. Fourteen of them were not present in Barcelona, just 4 years earlier. They were countries such as Slovakia, Slovenia and Moldova. Chechnya was present in Sydney. This illustrates the simultaneous tribalisation as well as globalisation of the planet. With tribalisation comes increased reverence for cultural/ethnic diversity. By 2020 there will likely be about 250 members of the UN, an increase of 50 or so, most of them tribal states locked into global and regional interdependence.

For more than a century, a continuous process of globalisation and internationalisation has been under way. During this time, people have transferred their primary loyalties from their town or city to their region or state, and finally, to their nation. In the 1990s, the final step to the development of a new planetary culture, the transfer of primary loyalties from nation to planet, will begin.

These globalisation/tribalised forces are being added to and encouraged by the forces of technological change. Information and communications technology is building a single, highly networked world. By the end of the century everyone on Earth will be able to witness, and to a degree participate in, a single event somewhere on the Earth's surface. Space separation and time zones no longer prevent people working together. Teleconferencing, e-mail, multi-media workstations and faxes are only some of the new tools of planetary cooperation and dialogue. New computer software is now assisting cooperative dialogue and decision-making independent of space and time. One of the biggest areas for innovation in information technology in the 1990s will be work which uses information and communications technology for cooperative and collaborative work, including work where participants are separated in space and time.

The Internet connects millions of people around the world. It provides them with electronic mail, a news service, remote computer access, remote database access, and many newer services. We are evolving towards *cyberspace*, a word and concept coined by William Gibson in his science fiction classic, *Neuromancer*.

The Internet has now become a major factor in trade and commerce. This has led to the creation of a new phenomenon: the small business transnational corporation. It is now possible to have a small business in a country town and trade directly with your customers all over the world, without interference from governments of “middle men”. All one must be able to do is to market a product or service which is sufficiently special that people in other countries want to buy it.

We are hearing and sharing the same news around the world by the courtesy of modern technology, and it reminds us that we share one small and vulnerable planet. A Minamata, Chernobyl or *Exxon Valdez* catastrophe reminds us of this shared fate and responsibility, even if we do not appear to be directly affected. We know more about what is going on all over the planet than ever before. John Donne's famous Devotion of the year 1620, an expression of what ought to be the relationship between different parts of humanity, has now become a reality in the early 21st century.

No man is an Island, entire of itself;
Every man is part of the continent, a part of the main;
If a clod be washed away by the sea,
Europe is the less, as well as if a promontory were,
As well as if a manor of thy friends or of thine own were;
Any man's death diminishes me, because I am involved in Mankind;
And therefore never send to know for whom the bell tolls;
It tolls for thee.

John Donne, 'Devotions upon Emergent Occasions' XVII

From Modernism to Planetism

In 1967 Kenneth Boulding wrote a famous essay called *The Economics of the Coming Spaceship Earth and* in 1969 Buckminster Fuller wrote a book entitled *Operating Manual for Spaceship Earth*. Both authors drew on the metaphor of the Apollo Mission, and particularly the famous picture taken from Apollo 8 which showed the beautiful, blue and white, fragile Earth against a lifeless moonscape in the foreground. Just after the near disaster of Apollo 13, which was the subject of a recent film, the then Secretary-General of the United Nations, U Thant used the metaphor of the Apollo Mission that nearly ended in disaster to promote the 1972 Stockholm Conference on the Human Environment, indicating that the whole planet was indeed in the situation of Apollo 13.

The dominant paradigm of the 20th century has been *Modernism*. This is so deeply entrenched that we have taken it for granted. *Modernism* meant the triumph of the western European way over everything else. It crushed cultural diversity through the forces of colonialism, religious evangelism and the power of western science and technology. A component of *Modernism* has been the concept of *progress*, which for most of this century has been something which we felt we shouldn't or couldn't stop. As the century proceeded, the attitude accompanying the utterance that "we can't stop progress" changed from unbridled enthusiasm in the 1950s to increasing scepticism, even cynicism and sarcasm, in the 1970s. By the 1980s, we needed to modify *Modernism*, as its dark side had become too significant to ignore, so we invented *Post Modernism*, in which we borrowed deconstructed parts of previous eras and built them into the new. We had recognised that some forms of progress involved throwing out babies with bath water. However, most of these additions were superficial, as the functionality did not change. We recognised that modern ideas and *Modernism and* their basis in western thinking and science and technology, did not hold all the answers. Therefore we began to listen and to learn about the wisdom of indigenous people, the very people we has been hell bent on crushing, and we borrowed ideas from the East and incorporated them into our Western mandates. In the last decade, we have even tried to create a new synthesis of theology and science — something which would have been inconceivable in the Modernist era Postmodernism is the process to reconstruct *Modernism* into something more appropriate to a globalised tribalised planet, and for creating a new paradigm which will consolidate in the early 21st century. I call the new and coming paradigm *Planetism*.

Kenneth Boulding introduced the idea that the Earth needed to change from a "cowboy economy to a "spaceship economy " if life on the planet was to survive. Today at the mid point of the 1990s humanity is mid way through a transition between what can be recognised as a disappearing *Cowboy Culture* and an emerging *Spaceship Culture* in the 21st century. We can now recognise the Cowboy Culture as an unsustainable society and the Spaceship Culture as a sustainable society. The *Cowboy* and *Spaceship Cultures* have the following characteristics:

The Cowboy Culture/Modernism (1960)	The Spaceship Culture/Planetism (2020)
• Individualism	• Communitarianism
• Independence	• Interdependence
• Autocracy	• Democracy
• Humanity separate from nature	• Humanity part of nature
• Unsustainable production/consumption/ development/lifestyles	• Sustainable production/ consumption/development/ lifestyles
• Patriarchy	• Gender equality
• Intercultural & inter-religious intolerance/hostility	• Intercultural & inter-religious tolerance/harmony
• Conflict resolution through confrontation/conflict	• Conflict resolution through negotiation/mediation
• Safekeeping through Defence	• Safekeeping through Security

The journey from the shoot out at OK Corral and life on the frontier, to negotiated sustainable living in the Spaceship is a metaphor used to describe the journey humanity is already making and will most likely be completed by about the year 2025.

The 19th century was the century of dependence; most of us lived in colonies. The story of the 20th century was one of independence. The last European empires, the Russian and Serbian empires crumbled, and others such as China and Indonesia will follow in the 21st century. The story of the 21st century will be one of interdependence, living and collaborating on an networked planet. In the evolving spaceship, Spaceship *Culture* the 1990s the individualistic formulas which had produced success in the past no longer working as they used to. The word interdependence is a key word to describe our evolving just-in-time, environmentally sensitive society: interdependence between men and women, between tribes and nations, between enterprises, between employer and employee in our work places, and between humanity and nature.

In the case of the environment, the message of *Modernism and* progress was clear, even if it was rarely specifically stated. In the 1950s one did economically well by doing ecological ill: environment and development were incompatible, and to thrive we needed to exploit the environment and in most cases people as well. By the 1990s, we were aiming to do economically well by doing ecological good, or at least while being environmentally benign. Now we wish to utilise the environment, sustainably. One consequence of interdependence is that a global company can no longer build a clean plant in Indiana and a dirty one in India. We can't poison those of lower socio-economic status, for while doing it we poison ourselves. Not to create a sustainable society in the 21st century would threaten all of us, for we share a common future. In terms of the environment, we recognised that much which was desirable, even essential, for future and present well-being was being obliterated by progress and by the dark side of *Modernism.*

Many of the new industries and enterprises of the early 21st century will design and innovate the products services and technologies to transform the world's peoples from cowboys into cosmonauts.

The issues of globalisation, tribalisation and technological change all have huge implications for health and wellbeing. Globalisation is creating a more interconnected and interdependent world and this has big implications for example for the transmission of disease from human to human and from other species to humans. Tribalisation is emphasising the richness of cultural diversity. Difference cultures have approached health and wellbeing in very different ways and in the Postmodernist late 20th century it is the non Western approaches that are being adopted as widely in developed countries as Western approaches are being adopted in developed countries.

The world's religions have been slow to recognise this extraordinary shift. The world religions seem to be splitting in two: into a progressive part, which is moving into the 21st century, and a reactionary part which is in a state of future shock, and which wants to return to the 19th century or even earlier. Religious fundamentalists are religious cowboys who still believe in patriarchy, authoritarianism and even killing in the name of religion. The world's religions are like everyone else, they are divided between adherents of the cowboy culture and adherents of the spaceship culture. For example the battles over issues such the ordination of women represent a major challenge to church cowboy patriarchy. Therefore we have two kinds of religions on the planet, dominated by what I call religious cowboys, the fundamentalists who are seeking a return to the security of the past and the religious cosmonauts who are seeking to adapt religion to the emerging nature of the 21st century.

Equally Tribalism is developing in two streams, what we can call Cowboy Tribalism and Cosmonaut Tribalism. In a place such as Bosnia we have the two living side by side, but it is the Cowboy Tribalists who are doing the damage and it is the emerging Cosmonaut majorities in the developed world who are seeking to place Cosmonaut order and tolerance on these Cowboy Tribalists.

The emergence of the spaceship culture is advantaging women. I believe this is one of the main reasons girls are now outperforming boys in schools. They were massively disadvantaged in the Cowboy culture, but they are more at home than men in the emerging Spaceship Culture. Feminists, who until recently, have focussed on the development of gender equity and on moving women from dependence to independence, are now beginning to move on to interdependence, at least in those part of the planet where the Spaceship culture is already beginning to dominate. In the remainder of the Planet which is still dominated by the cowboy culture, women are still in as much trouble as they ever were, they are still caught in the web of dependence .

The transformation of our society of the last 20 years from one which promoted individual rights over community rights has changed to the point were community rights are often seen to be more important than individual rights. The battles in the 1990s over smoking in public and gun ownership are just two manifestations of this battle between community and individual rights. The community has won in each case but not without bitter conflict between the community and some defenders of individual rights.

The gun control debate is continuing to focus our attention on the issue of community violence. In reality it is my view that the world is actually not more violent, but thanks to technology, its capacity to do damage has increased immensely. In the cowboy days, the enemy tribe lived in another territory and tried to take our land by force, he came over the hill with guns blazing. Defence is the form of protection for a cowboy era. Now the enemy might live amongst us, a fellow passenger on the spaceship. We are now moving from an era of defending the territory from invasion (i.e. defence) to protecting ourselves from threats from within (i.e. security).

Design Rules for Green Ways and Green Wares

Here are six design principles which should be used to guide our innovation towards creating future ecological prosperity

Design Rules for Green Ways and Green Wares

1. *Living within perpetual solar income*. This set of words used in the Hannover principles was first used by R Buckminster Fuller. He claimed there is more energy in one minute of tropical cyclone than the sum of all the nuclear weapons ever created. Until now we have used the product of solar income which arrived on the Earth in previous eras namely fossil fuels. The challenge is to devise new ways to utilise direct not historical solar energy in our everyday pursuits including in agriculture and in rural communities, to ensure that there is no collateral damage to the climate and to our own production systems from our use of fossil fuels. Utilising fossil fuels which could cause our own climate will become less suitable for grains production in the future is equivalent of fouling our own nest.

How many new green wares, such as this one, can you imagine so that we can create a sustainable society which lives within solar income? A few would include *solar powered ways and wares, energy efficiency ways and wares , and fossil fuel conservation ways and wares*

Here is a Scenario for *solar powered ware* which would dramatically reduce the use of fossil fuels in agriculture with massive ecological and economic benefits to both the farmer and the planet.

Scenario: The year is 2015 .in a farmers paddock there is a machine. It harvests solar energy (photons) through parabolic mirrors and lenses .These photons are converted to electrons –producing electricity from photo voltaic cells , which in turn splits water into hydrogen and oxygen. the hydrogen is produced and stored 365 days per year and then used then used to operate agricultural machinery usually for about 50 days per year., by both thermal conversion through appropriately modified diesel engines, and by fuel cell driven electrical motors . This solar/hydrogen powered system can be used to power every aspect of rural living including for household energy. This means that farmers are using solar energy which is free on a recurrent basis, with only the capital cost of the equipment being significant. *End of Scenario.*

2.Turning Waste into Food: *realising zero net waste*. There is no such thing as waste, the waste of one species is the food for another .We must abolish waste not just reduce it.

There are many companies who are innovating *waste abolition ways and wares.* One example is carbon *waste transformation ware.* , A number of companies have technology to turn the organic matter in municipal solid waste, green waste, organic industrial waste (eg from dairies, cheese making plants, tanneries, food production facilities, and paper mills) into compost. Compost in turn, in turn can be combined into with rock minerals, microbes and humic acid to become biological production fertiliser. These can be customised for different crops, soil types, and climates, in much the same way that drugs can be released fast or slow in the intestine depending on the specific requirements. . These can be suitable for Mediterranean, tropical or sub tropical areas. They can be designed that under specific local conditions excess soluble minerals are not produced so they can be leached from the soil in intense rainfall events, thereby causing eutrophication (pollution by excessive nutrition of rivers, lakes, estuaries and off shore systems such as coral reefs.)

3. *Avoiding collateral damage, achieving zero collateral damage.*
What do we mean by zero collateral damage?

Here are a few examples. In the field of medicine, chemotherapy is a very gross, unsubtle and unspecific approach to the treatment of cancer. The whole body is literally poisoned in order to kill cancer cells in one part of it. The side effects (or collateral damage) of this treatment are considerable and many non-target cells are destroyed. More modern methods involve the use of biological systems, which can intervene in cell biochemistry to turn off or on a critical enzyme which can either cause or heal a disease. Or these biological systems can be used or carry a toxic substance on a molecule which is customised to fit into a unique place in the cell, such as a cancer, cell without endangering the rest of the body. This package of poison is delivered to the exact place where it is needed, at the right time and in appropriate concentrations in what is called just-enough-in-place-and-time (JEPT see below). This is sustainable medicine.

Some of the worst causes of ecological collateral damage, ecological poverty , in agriculture are caused by insect pests , fungal diseases and weeds . Equally some of the innovations we use such as pesticides and herbicides can remove one form of collateral damage by creating another form. Creating sustainable prosperity requires that we create economic prosperity without creating ecological poverty (ecological collateral damage)

One of the biggest environmental issues of the early 21st century is the issue of genetically modified organisms (GMOs). It would be useful to consider this issue under this banner of avoiding collateral damage. In most cases the biological control of pests achieves low or no ecological collateral damage. This is because before these controls are introduced extensive research is undertaken to ensure that there is no or little collateral damage resulting from the introduction. However there are mistakes we still make. The introduction of the cane toad into Australia to control pests of the sugar industry is a good example of this. This shows that the collateral damage from the introduction of biological control systems can be as bad as from chemical pesticides. Chemical pesticides by their very nature can rarely be as subtle or selective in their impact. However biological systems cans be. Pesticides are often used are used to kill specific pest organisms, but because these pesticides are not specific for a particular pest and are sprayed indiscriminately on a crop they threaten many non-target organisms, as well as the people using them and often organisms quite distant from the spraying if the pesticides are carried by water systems or bio-magnified in food chains. This creates environmental and health collateral damage. Modern, more sustainable approaches can use a variety of biological controls, such as parasite, predator and pheromone control. Or it could involve the use of genetically engineered plants containing a gene that is specifically lethal to the pest, such as the BT gene. We are currently in the T Model Ford stage of this technology. The agreement in Toronto in January 2000 to regulate the movement of genetically modified organisms (GMOs) in international trade is a sensible response to real concerns that some genes could escape into nature and cause both health and environmental harm. There are huge and exciting possibilities for the use of GMOs to create benefits, both for people and the environment. However we have to both careful and thorough. Just as we are careful when we test the impact on non-target organisms before introducing parasite or predator control. With GMOs, collateral damage can spread by many means. The transfer of genes to non target organisms by the spread of pollen is also a form of collateral damage and we must test this just as we test for the impact of predators or parasites on non target organisms before release. Provided the precautionary principle of sustainability is used intelligently it should be possible to obtain an intelligent balance between the demands of the technophiles and the technophobes, for the benefit of both people and the environment.

Let me give you two examples of how GMOs have advanced ecological prosperity rather than retarded it All grape vines are susceptible to the fungus powdery mildew, and grapes are treated with some toxic fungicides to prevent infection. French scientists in the 1970s discovered a gene or group of genes in the closely related North American genus *Muscadina* which confers resistance to powdery mildew. A direct hybrid involves the transfer of undesired genes from Muscadina which dramatically lowers the quality of the wine product. We can slowly eliminate these genes with generations of back crossing and careful selection. If we transferred the key genes we can have the best of all worlds, and very quickly: high quality wine, and zero collateral damage to the environment.

The common potato *Solanum* is susceptible to the fungus Phytophthora infestans, the famous potato blight. The use of fungicides, including copper salts, to deal with Phytophthora can produce unacceptable levels of environmental contamination in soils, a significant form of collateral damage. Recently US scientists have found resistance to Phytophthera in a Mexican wild species *Solanum bulbocanstanum* . As potatoes are clones anyway it is difficult to hybridise this resistance through normal hybridisation, and if it could be done using traditional hybridisation the result would be an inferior potato because of the incorporation of many less desirable wild genes. These scientists cloned the high resistance gene, transferred it to the potato, and found that resulting transgenic plants to be completely resistant to potato blight.

Genetic modification can provide a result as subtle and as specific as parasite or predator control. If the ends is to create highly productive and yet sustainable agriculture, we can sometimes justify using genetic modification (GM) as an means along with some other approaches such as parasite, predator and pheromone control. It is likely that some GM approaches might produce less collateral damage than approaches which are currently used in organic agriculture. If the use gene technology, means we can avoid using an approach

which produces more collateral damage, such as avoiding using toxic chemical such as pesticide, we can advance ecological prosperity However if it is used to increase the sales of a know non specific toxin even if it reduces collateral damage somewhat , the answer should be no. If it is used to sterilise seeds to maximise corporate income, while passing increased economic, social and environmental costs on to everyone else, the answer should also be no .

We should be clear about our goals here. We should strive to eventually to have a pesticide free future, because we have been able to find more subtle and precise ways to intervene in complex systems, which produce zero collateral damage. . This is equivalent to abolishing chemotherapy as a treatment for cancer and replacing it with subtle and precise interventions which avoid collateral damage. There are important similarities between medicine and agriculture. We should be seeking both sustainable medicine and sustainable agriculture: that means aiming for zero collateral damage in both of them. In agriculture let us consider various form of pest *control ways and wares*, which could involve the utilising various forms of biological control. These could include various biological controls such as parasite, predator and pheromone control , the genetic modification of both host and pest , traditional hybridisation to create immunity , and the use of pesticides, to name just few options . The important consideration is the amount of the *ends* achieved, in this case the effectiveness of the treatment achieved and the amount of ecological and health collateral damage avoided, not the particular technology used . Too many people focus on the technological means used , for example declaring all biological control good and all genetic modification bad . This is foolish.

Many environmental problems are caused by excessive levels of inputs.

For example chemical fertilisers are added to the soil in large quantities to increase plant production but only a small proportion is taken up by the plants. Much, indeed most of it, is rendered insoluble and is locked into a 'safe' in the soil and is therefore unavailable to the plant unless it is remobilised in a soluble form by soil microorganisms. Some of the remaining fertiliser increases the osmotic stress and therefore the water availability to the plants, kills off the earthworms and generally reduces the soil from a living system to a mere physical structure to hold up the plants. The rest of the fertiliser is washed away by rain and causes major eutrophication (pollution by over-nutrition). This is a form of collateral damage, which results in algal blooms, the destruction of fisheries and, in tropical oligotrophic (nutrient-poor) marine systems, the destruction of coral reefs.

A more ecologically sustainable approach involves organic and biodynamic agriculture and horticulture, which is a form of JEPT plant nutrition. Here mineral fertilisers are converted by biological systems in the soil into available nutrients at just the correct rate and in the correct place in the plant's rhizosphere, the zone adjacent to the plant's root hairs which take up water and nutrients. This avoids an excess of soluble nutrients which would be washed out to pollute water resources. Even the insoluble fraction of nutrients in the soil can be mobilised by soil microbes which, in essence, provide a combination to the nutrient 'safe' in the soil, thus enabling the crop to gain access to these nutrients. This involves returning to agricultural patterns that were in use before the invention of chemical fertilisation, but adopting them by using high technology and in a very subtle way. How many different JEPT *facilitation ways and wares* can you imagine?

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avoiding an excess of soluble nutrients which would be washed out to pollute water resources. Even the insoluble fraction of nutrients in the soil can be mobilised by soil microbes which, in essence, provide a combination to the nutrient 'safe' in the soil, thus enabling the plant to gain access to these nutrients. This involves returning to agricultural patterns that were in use before the invention of chemical fertilisation, but adopting them by using high technology and in a very subtle way.

The same situation exists in the area of energy. Electric power is produced at large, centralised generating facilities (coal-fired, nuclear, etc.) that all produce unacceptable waste levels and thus violate the sustainable living design principles. Our use of fossil fuels is changing the climate by the production of greenhouse gases and, of course, nuclear waste produces an intractable waste management problem. There are numerous alternatives to such approaches. Some of these can continue to utilise the same electricity delivery networks while incorporating over time energy production inputs from renewable sources to replace the existing fossil fuel resource base. Gradually there can be a slow addition of these renewable units as large fossil fuel or nuclear sources reach the end of their life cycles. In several parts of the world, including Australia, customers can nominate that some or all of the electricity they purchase should be green power provided from renewable resources. This power costs more and the additional funds are used to add renewable energy sources to the grid to respond to growing demand. This is an example of people with *green ways greening* the electricity market, and of *green ware* being added to supply this greener market demand. It is claimed that in large high-demand grid systems there will always be a need for some non-renewable/nuclear energy. It is true that most current renewable sources are small in scale and not appropriate in current energy-intensive systems. However, this is a reflection of the domination of 'brown' interests in the intensive energy sector, and their unwillingness to examine 'green' alternatives. Some sources which are renewable can be very large and are very suitable for adding to large grid systems, including wave and tidal power, hydro and OTEC (Ocean Thermal Energy Conversion) which is based on generating power from the temperature differences between the ocean's surface and ocean's depth. There are others which are long-lasting and not climate threatening though not strictly renewable. These include geothermal systems based on both volcanic heat and so-called 'hot rock' systems, which utilise energy generated by piping water beneath the earth so that it passes through rocks containing naturally occurring nuclear radiation.

In situations where energy use is not so intensive, renewable approaches can be very viable. Some of these can be totally autonomous, not requiring connection to the power grid at all. These can be based on JEPT production and consumption systems of solar/electric, solar/thermal or solar/hydrogen, micro hydro, wind power and many more options. Many systems can use solar-generated electricity to split water to produce hydrogen which is then sent to the point of consumption through already existing gas pipelines, and reconverted into electricity JEPT through the use of fuel cells, or burned thermally where heat is required. The options are almost endless. However, it is very difficult to overcome brown interests and problem-centred politicians and bureaucrats who are vulnerable to political pressure being exerted by brown interests . This means that all of these options have to struggle to get the recognition and research and development expenditure they deserve. In this case the increased recognition of collateral damage caused by the use of fossil fuels is due to the fact that we have greater knowledge. It is not caused by a lack of precision as it is impossible to burn fossil fuel without releasing carbon dioxide, although it is theoretically possible to prevent this release to the atmosphere through a series of technological approaches, such as by utilising algae or other plants to absorb carbon dioxide and to produce food. We now know a lot more about the impact of carbon dioxide on climate change, and we can now appreciate a form of collateral damage which we did not recognise a few decades ago.

The discovery that chlorofluorocarbons (CFCs) were obliterating the stratospheric ozone layer is a similar story. Environmental folk lore is full of such narratives and this emphasises the fact that ignorance can be just big a cause of environmental problems as are malevolence and greed.

In the last decade 'green' power is now a real option which is moving from the margins to the mainstream in developed countries; despite the continued pressure from 'brown' interests an undermining of 'brown' political power has commenced. Electricity providers are recognising that they have to service this expanding market demand for 'green' power or lose market share to competitors who are prepared to provide it.

A final example of JEPT can be seen in the defence and security area. Traditional warfare involves the use weapons of mass destruction and involves substantial or even immense levels of collateral damage. These

weapons do not distinguish between true adversaries and innocent members of the enemy population. The 'smart bomb', in theory, is designed to precisely remove the threat, the enemies and their war machine, but not damage others who cohabit on the spaceship, or the spaceship itself, and therefore to cause no collateral damage. Like all new technologies it is still relatively primitive, and it will become more precise in the years ahead as security replaces defence as the core concept for dealing with twenty-first century threats. However it is clear from the kind of war fought by NATO against Serbia in late 1999, and against Iraq in 2003, that collateral damage, in terms of both innocent human lives and unintended physical damage, is minuscule compared with earlier decades of the twentieth century, when mass destruction first became a serious possible consequence of war. The development of global positioning technology has permitted the creation of precise weapons delivery unimaginable a couple of decades earlier. The threatening scenarios of nuclear winters and global destruction resulting from the collateral damage of mass nuclear weapons exchanges have become much less likely in just two decades. This is not only because of the end of the political and ideological confrontation of the cold war, but also because more precise warfare technologies have been developed which are aimed at minimising and presumably ultimately avoiding, collateral damage. One of the main worries of those who are concerned with nuclear proliferation is that some cowboy-led countries are still interested in developing nuclear weapons which are still aimed at causing mass destruction, rather than in creating 'smart' precision weapons that are aimed at achieving their ends while avoiding collateral damage.

We are getting nearer to the era where it will be possible to remove serious cowboy threats to the security of the spaceship without endangering the cosmonaut population or the spaceship itself. This is an example of how cosmonaut security technologies are replacing cowboy defence technologies.

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All of these examples of JEPT achieve a desired outcome in a complex interconnected system while leaving the system intact and undamaged. This should be a design rule for sustainability. We are all living in a spaceship and we are all connected with its systems. We must seek more and more subtle ways to get what we want in ways which minimise collateral damage.

4.Protecting and nurturing biodiversity. In protecting biodiversity and saving endangered species all sorts of new scientific and technological approaches are used, including generic modification and cloning. In these cases we are of the view that these approaches are warranted because of the importance of the outcome. The role of biotechnology and other products derived from the life science revolution will produce many *biodiversity protection ways and wares* and *biodiversity improvement ways and wares*. I am currently working with a company called Earth Sanctuaries which is involved in creating a global company and brand name for the protection and nurturing of biodiversity. It is already creating a number of ways and wares. Already it has been responsible for taking six species of mammals from the Red Book list off endangered species. We can expect many more commercial enterprises to be involved in biodiversity protection and nurturing, in the next decade.

5.The Precautionary Principle. All our approaches should follow this principle which says if there is any doubt, don't do it. This has application in deciding which innovations, which green ways and green wares, should be applied in the field. Whether we are talking about ways and wares such as those to live within solar income, turn waste into food, or avoid collateral damage, the precautionary principle should be utilised. It should be also be used in the assessment of different technological approaches eg predator or parasite control, pheromone release, or gene modification.

6.*Envisioning, assessing realising and auditing ecological prosperity.* To realise an ecologically prosperous future we must be able to imagine it, model it, innovate new ways and wares to realise it and monitor our success in achieving it some of this will require us to internalise the environmental costs of production, development and consumption,. This acts to ensure that the true costs and life-cycle costs of protecting and restoring environmental damage are reflected in the price of a product or service. Man people will be familiar with the triple bottom line first suggested by John Elkington of the British firm SustinAbility. This is described in his book *Cannibals with Forks*. The concept of Sustainable Prosperity involves the creation of a quadruple bottom line. The creation of *sustainable prosperity ways and wares* could include software to software to assess performance and plan strategies. This could include *sustainable prosperity performance assessment ways and wares* and *sustainable prosperity strategic planning ways and wares*

In the next two decades it will be necessary to transform these design principles into new *green ways and green wares* which are useful on the ground. This is our innovation journey forwards. it is both a challenge and an opportunity .Those who create and market the ways and wares will become major economic successes in the 21st century; they will create economic prosperity for themselves and others by creating ecological prosperity. These ways and wares will involve the major scientific and technological innovations of the 21st century namely cyber-technology (IT, and its 21st century successors ,KT (knowledge technology) and WT (wisdom technology), Biotechnology, new materials technology and nanotechnology. There is no room for any new Ludditism if we want to create a sustainable society in the next generation . We must have clear idea about choosing and designing the outcomes we want and not confuse the ends and the means. It is the ends which are important, and we must be open about selecting, and without prejudice, the means which maximises out best chance to create a sustainable society.

The role of government in creating ecological prosperity

In most developed countries environmental policy has been dominated by the use of regulatory/legal instruments, by excessive faith in macro-economic instruments and by concentration on protection/conservation. There is a widespread belief that if the laws are sufficiently tough and properly policed, and if an appropriate mix of incentives and taxes is present, a sustainable future will be assured.

Many people still think that the journey to ecological prosperity must be guided by governments and, including by an international system of governance such as the United Nations. This view may have been correct a few years ago but it is no longer accurate. The globalisation of markets is changing the situation. Governments continue to respond to public opinion in their own national jurisdictions but transnational corporations respond increasingly to global public opinion. Governments rarely act as altruistic globalists and will mainly react to rather than lead public opinion—which must become a majority opinion, or close to it—before they will change their ways. This situation has not changed substantially over the last few years. Governments used to be part of the solution; now they are often part of the problem.

Meanwhile, global corporations have faced a big change in their circumstances. They are more likely to respond to global 'green' interests. It is the emergence of Planetist public opinion which will largely shape the work of transnational corporations with their headquarters in developed countries. A two per cent change in global market preference represents a huge change in absolute market size. A large global market for *new green ways and green wares* would exist, even if this consisted of the sum of many small minority markets in many individual countries. In other words, the factors which operate on private sector companies begin much earlier than those which act on individual governments. The markets, that is global public opinion, are greening at a faster rate than governments are reacting. The leading edge of progress will be determined by the success of the most innovative participant in the market. Therefore, the next stage in the greening of the Planet will be driven by the greening of global markets and the rapid response to these changes by the private sector makers of green ways and green wares.. Some emerging transnationals with their headquarters in developing and transitional countries may, for a time, be less Planetist in their outlook because their populations and shareholders at home contain smaller proportions of cosmonauts. However, over time, even these will have to adopt cosmonaut values if they want to thrive in a Planetist future. They will not be able to sell their products into cosmonaut-dominated markets unless they adopt cosmonaut values.

One of the reasons for the relative lack of success of the United Nations Environment Program (UNEP) over the past few years is because it has depended too much on governments to be the vehicles of global change. The private sector will react to market shifts wherever they are. UNEP is more likely to be successful in its agenda to green the Planet if it places much more emphasis on the greening of global markets, assists the greening of global transnational companies and catalyses the formation of new enterprises which produce *green ways and green' ware*. UNEP is now working more with the International Business Council for Sustainable Development, a council of large companies that was established during the preparatory process leading to the 1992 Earth Summit. This involves collaboration with green interests, global companies and professional organisations, and environmental bureaucracies. Governments might then be forced to move faster because they would not only be subject to pressures from their own environmental bureaucracies but

would also receive pressure from a network of global companies that are seeking to do well economically by doing ecological good.

One of the most interesting changes in this field has been the increased cooperation between environmental non-government organisations and global corporations, which are now collaborating to place pressure on governments. A few years ago a large proportion of environmental disputes was between governments and environmental non-government organisations on the one hand, and businesses, including transnationals, on the other. Now environmental non-government organisations are often siding with businesses to take on governments. Transnationals which are already, or wish to be, members of the green interests need green NGOs to help to create the market demand for new green ways and green wares. Both these groups can globalise themselves effectively and rapidly but governments cannot, because they are bound by the limitations of the nation state.

The situation is different for the public sector. Because consensus is needed at most international conferences, such as those which create international conventions, the rate of progress is likely to remain slow unless it is clear that the world is facing catastrophe. The rate of progress will be set by the willingness of the least willing participant because consensus is needed in most international actions decided upon at international conferences. Indeed, nation states are starting to become as ineffective in shaping the global economy as individual Australian, Canadian, German or American states have become in shaping the national economies of their respective countries. It is hardly surprising that the United Nations system, which largely operates through the collective action of individual governments, each of which is primarily responsive to its domestic public opinion, is so slow to achieve outcomes. It can make decisions at an international level, but actual change must come through the actions of individual nation states acting in concert. If private funds become increasingly available for the civilisation of globalisation, some of these funds can be used to establish new cutting edge green enterprises creating new green ways and green wares for global markets.

The achievement of ecological prosperity will require a complementary set of actions, including a number of international agreements and protocols to create the international legal and ethical framework to provide guidance to countries, transnational corporations and, indeed, everybody who wishes to participate in the design and innovation of green ways and green wares. This process involves placing less dependence on regulatory law and greater reliance on the emerging global market-place. It is much quicker to produce a new green innovation and release it into global market than to try to get international agreement to regulate an existing global problem. Early adopters take up the innovation and market themselves as greener than their competitors. We will always need some regulation. But regulation can only prevent bad things from happening. It is virtually useless at making good things happen.

Environmental policy in developed countries is mostly problem centred. It is about preventing and cleaning up environmental damage. Even debates about sustainable development concentrate primarily on stopping unsustainable development rather than on realising the sustainable alternative.

While governments no longer have the capability to manipulate tariffs and subsidise exports, other means can be found to restructure industries including some of the economic rationalisation including competition policy and reform of labour and financial markets. A national strategy to create green future could consist of the following elements:

- The promotion of greening of domestic markets ahead of global markets in order to provide a domestic demand for *green ways and green wares* which would subsequently be exported to a world . Some of this will involve both regulation and incentives and some of can involve incentives. For example a government can require that power producers generate a certain, and increasing, proportion of energy from renewable sources. It can prescribe that a certain, and increasing, waste going to landfill be reduced until landfill are totally closed on a prescribed date. In these cases *renewable energy ways and wares*, and *waste reduction ways and wares and waste abolition ways and wares* could subsequently become global exports. If markets get to the future first, innovations will follow them and get to the future first.

Promoting the establishment of green industries and enterprises. The creation of a rapidly greening domestic market will provide most of this without any other incentives. Governments can also promote green industrial

clusters, where green research and development centres, higher education centres specialising in environmental research and development and green enterprises are co located. . A government can encourage the endowment of a number of chairs (professorships) in areas of knowledge central to any chosen industrial direction such as renewable energy or waste management. Some of these new industries will be described below.

Even though governments have declining power in many areas, they still have a major role to play. In the 2004 US elections, politicians talk of preventing the export of white collar jobs to developing countries . This retro- thinking actually discourages people discovering new ways to create prosperity without the need to resort to remedies based on control . The manager controls. The leader facilitates, and the leader helps the organisation, nation or community to get to the future first. Primarily, more attention must be directed towards making good environmental things happen rather than preventing bad environmental things from happening. If any nation wishes to build a significant piece of its industrial future on the opportunities created by the journey towards an ecologically prosperous society it will, of course, need to develop a mission-directed strategy to do so. This will require mission-directed leadership from government. Most governments still have problem-centred environmental policies. The majority of these involve one or more of four issues: responding to emerging environmental problems such as pollution, regulating emissions of toxic materials into the environment, requiring environmental assessments of development proposals, dedicating new conservation reserves such as National Parks, and working to save threatened flora and fauna and protecting biodiversity. Sadly, many if not most environmental groups also see their role as stopping undesirable and unsustainable development rather than imagining, designing and building desirable sustainable alternatives. This is the result of a dominant problem-centred management culture affecting all sides of the environmental debate.

A mission-directed strategy should first promote the development of *green markets* through the promotion of *green ways* through the education system and the media. This would involve the promotion of sustainable lifestyles, increasing customer awareness of what to look for in seeking green products and services. It would involved awarding those who create excellence in *green ways* and *green wares* It would involve stimulating the professions, particularly the design-based professions, such as architects, designers. planners and engineers, to develop responsible professional practices that promote *greener outcomes and green wares*, and educating finance organisations about the opportunities that are present in providing debt and equity finance to *green innovators and entrepreneurs*. This would involve the mainstreaming of what is called ethical investment or socially responsible investment which could be called Planetist or cosmonaut investment. It also involves slanting the market playing field to ensure that *green ware* is competitive with its less sustainable competitors (*brown ware*). At present, the playing field often favours the brown ways and wares.

Governments will also need to recognise and modify the power of vested interests. At present many attempts by governments to move the agenda towards the creation of sustainable production, consumption, development and lifestyles is resisted by what can be called call the 'vested interests of the ecologically unsustainable present' (*the brown interests*): those who produce the brown ways and wares which will decline in market share as the world becomes increasingly Planetist. There are, of course, vested interests which could be called the 'vested interests of the ecologically sustainable future' (*the green interests*). These interests are the producers of *green ways and green ware*. Most people still think of environmental NGOs as the major expression of *green interests*. This was the case in the 1970 and 1980s where modernism was still so dominant . But times are changing . Now there are hosts of *green enterprises* producing *green ways and green wares* for increasingly *green markets*. For example one of the most resolutely cowboy industries the motor vehicle industry is changing. Hybrid and hydrogen power motor vehicles are now coming onto the market. Petroleum companies are going 'beyond petroleum'. These are also members of *green interests*. The more enlightened environmental NGOs are now forming alliances with these commercial organisations because they understand that a green future requires a green market-place. At present, the 'brown interests' are powerful and well organised and have enormous influence on governments. An example is the political polarisation which occurred in Australia when the coal and aluminium industries fought against imposed reductions in greenhouse gas emissions. Excessive problem-centred thinking influenced many Australian politicians to view the proposed reductions as damaging to the interests of Australia's these industries, which was misrepresented as the national interest. The goals adopted at the Kyoto Climate Change Summit in

December 1997 require most developed countries to reduce their greenhouse gas emissions to 5per cent less than 1990 levels by the year 2010. Most experts agree that a 25per cent reduction on current levels could be obtained by restricting large-scale clearance of native forests for agricultural and pastoral use, and a reduction in per capita energy use through improved efficiency. Any direct substitution of a renewable energy source over a non-renewable source, and any elimination of methane production such as through the elimination of landfills and the composting of urban waste, would improve this even further. Molecule for molecule, methane is thirty times more deleterious to climate change than carbon dioxide. There is already technology available to divert all carbon-based material from landfills and to transform it into top-soil and organic fertilisers. This is *green ware*.

In the 20th century staying out of trouble meant that one complied to national laws In the 21st century it will mean not antagonising or threatening one's fellow cosmonauts on Spaceship Earth. At present one can become very unpopular if one smokes in a café or airliner. Imagine that value system working for the whole of Spaceship Earth, and against fossil fuelled power stations as well as against individual smokers.

Here is a scenario for the ethical future which I developed for an oil company who wanted to understand future market possibilities and options for their products.

Scenario To burn a barrel of oil for energy in the year 2020, and not to use that same barrel of oil to create carbon based material ,and other carbon based products, is the moral equivalent of smoking in a passenger aircraft in the year 2004 or mining the Taj Mahal for its marble content. *End of Scenario*

This would mean that oil companies which see their core business as energy will need to restructure their mindsets and programs to focus on renewable energy contrary to some opinion . Those who see core business as hydrocarbons would adopt a different pathway froward.. Nuclear energy is an option. The issue of creating long term waste containment is possibly soluble, but how do we dismantle and recycle old facilities safely, and how do we transport nuclear material safely? Easy solutions are not likely to be forthcoming for the cost of a single failure could threaten the whole planet. However an ever bigger issue is nuclear proliferation. In a world increasingly vulnerable to terrorist initiated attacks the thought of tons of plutonium finding its way into illegal global markets is a horror scenario. Coal and fossil fuel on the other can used for energy if these are first converted to hydrogen which can be burned without contributing to global warming. The carbon produced in the process can be sequestered underground to avoid releasing it to the atmosphere, and used to create other products, such as plastics and even be used to provide carbon dioxide for algae driven industrial food production.

Here are two examples of *global warming prevention ways and wares*

Scenario The year is 2007. At a meeting at a conference, *Living with Global Warming*, architects are discussing designs which help to keep buildings cool without using large amounts of non renewable energy. Several papers illustrate that the intellectual property for the creation of innovations to achieve this have existed for hundreds, even thousands of years. These are drawn from cultures in Central Asia , the middle East and North Africa, many of who also know how to not only keep buildings cool in summer, but also how to keep them warm in winter , through the use of passive and active solar energy systems. After the conference a number of architects announce they are forming a number of companies to *produce solar heating ways and wares* and *solar cooling ways and wares* with the intention of marketing them to the world*., End of Scenario*.

Scenario. The year is 2014. In 2008 the Daimler Chrysler group issued a new policy resulting from the need to respond to new global greenhouse emission reduction targets, which warned motor vehicle manufactures that all motor vehicles would need to limit carbon dioxide missions by seventy five percent by the year 2016. As result there are now a number of commercial responses to this initiative. Diesel manufacturers are now producing vehicles which run on 90% hydrogen and 10% diesel. Electric vehicles abound. Some are hybrid vehicles running on natural gas / hydrogen, while other are running on pure hydrogen. *End of Scenario*

Green industries and Green enterprises.

Before we can convince people to buy *ecological prosperity ways and wares, new* innovations for sustainably developing, producing, consuming, living and trading, they must be given the option to do so as real alternatives, and not merely as imagined ones. The design-based professions have a very important role to play as they will design much of the sustainable society we are seeking to create.

There are now many approaches to assist a professional person who is seeking to create an ecologically sustainable form of development or production. These approaches are all part of a rich body knowledge to inform the development of specific *green ways*. One of these is the Swedish design process called the *Natural Step* that was conceived by Dr Karl-Hendrick Robert. Robert is a Swedish cancer specialist, who was concerned at the rising incidence of environmentally related childhood leukaemia and the fact that global debate about causes and priorities for action was ineffective in preventing an increase in morbidity and mortality from this form of leukaemia. He developed a simple set of four principles to guide ecologically sustainable development:

- Substances from the earth's crust must not systematically increase in the biosphere (the zone of the earth's crust, land, water and air wherein life exists).
- Substances produced by society must not increase systematically in the biosphere.
- The physical basis of productivity (soil, air, water and nutrients) and the diversity of nature must not be systematically diminished.
- The use of energy and other resources must be fair and efficient with respect to meeting human needs.

The *Declaration of Interdependence* from the 1993 World Architectural Congress established guide to professional practices and ethics, and a list of state-of-the-art design rules to realise a sustainable future. It is a set of design rules for the creation of green ware and a set of professional ethics which are part of green ways.

American architect Professor Bill McDonough and his associates, have developed a set of principles for sustainable design called the *Hannover Principles*. These have been developed to guide the design and innovation processes for a sustainable future and as guidelines for the Hannover 2000 Expo—the World Fair for the year 2000 — which had as its theme Humanity, Nature and Technology. This was the first major Expo to focus of the need to creation of a 21st century sustainable society and provided an international showcase of innovations: designs, products, services and technologies for ecological prosperity The Hannover Principles are:

1. Insist on the rights of humanity and nature to coexist in a healthy, supportive, diverse and sustainable condition.
2. Recognise interdependence. The elements of human design interact with and depend upon the natural world, with broad and diverse implications at every scale. Expand design considerations to recognise even distant effects.
3. Respect relationships between spirit and matter. Consider all aspects of human settlement, including community, dwelling, industry and trade in terms of existing and evolving connections between spiritual and material consciousness.
4. Accept responsibility for the consequences of design decisions upon human wellbeing, the viability of natural systems, and their right to coexist.
5. Create safe objects of long-term value. Do not burden future generations with requirements for maintenance or vigilant administration of potential danger due to the careless creation of products, processes or standards.
6. Eliminate the concept of waste. Evaluate and optimise the full life-cycle of products and processes to approach natural systems, in which there is no waste.
7. Rely on natural energy flows. Human designs should, like the living world, derive their creative forces from perpetual solar income. Incorporate this energy efficiently and safely for responsible use.
8. Understand the limitations of design. No human creation lasts forever, and design does not solve all problems. Those who create and plan should practise humility in the face of nature. Treat nature as a model and mentor, not an inconvenience to be evaded and controlled.
9. Seek constant improvement by the sharing of knowledge. Encourage direct and open communication between colleagues, patrons, manufacturers and users to link long-term sustainable considerations with ethical responsibility and re-establish the integral relationship between natural processes and human activity.

McDonough added the following explanation to the document:

The *Hannover Principles* should be seen as a living document committed to the transformation and growth in the understanding of our interdependence with nature, so that they may adapt as our knowledge of the world evolves. These principles were officially adopted by the City of Hannover and are being used by design-based professionals, particularly in North America, Europe and Australasia.

In their excellent 2002 book *Cradle to Cradle*, McDonough and his colleague Michael Braungart distinguished between 'eco-efficiency' and 'eco-effectiveness'. The authors maintain that the concept of eco-efficiency is a flawed concept. Eco-efficiency is a problem-centred approach which involves lessening undesirable outcomes such as minimising pollution and waste. Eco-effectiveness, on the other hand, is a mission-directed approach, which involves designing a world where these problems do not exist at all because they have been designed out. Eco-effectiveness would abolish waste not minimise it

Design Principles for Green ways and Green wares
Here are six design principles which could be used to guide our innovation towards creating future ecological prosperity

Industries and Enterprises for the Creation of Ecologically Prosperity

The mission to design and innovate an ecologically sustainable future will provide huge opportunities to those with the vision, imagination and enterprise to design the *green ware and green* ways to realise it. This will also involve the creation of whole new industries. There are many other new industrial opportunities which are needed to create cultural and social prosperity.

Some of these future industries ecological prosperity will be:

1. The *earth repair* industry, which restores and rehabilitates degraded, polluted or even obliterated ecosystems such as rainforests, coral reefs and range lands, and their soil, water and biotic components when they have been degraded by development such as mining or by over-exploitation. This industry also rehabilitates degraded and contaminated urban areas, polluted lakes and rivers, seas and airsheds. The restoration of rainforests is one element of the 'earth repair' industry, one of the biggest industries of the twenty-first century. It could also be seen as the 'spaceship maintenance' industry.

Scenario: The year is 2010. The Chief Executive of Rainforest Restoration Ltd, which has its world headquarters in Cairns, receives a phone call from the Prime Minister of Malaysia. The Prime Minister says: 'We have cut out almost all our rainforests in Malaysia. I should have seen the signs in the 1990s, when it was clear that global appreciation of rainforests was increasing, but the actual amount of rainforest resources was rapidly diminishing. We, in Malaysia, made a terrible mistake when we cut out so much of our tropical rainforests in the 1980s and 1990s. We would like to have a significant proportion of our rainforests restored to where they used to grow, and particularly to the Malayan Peninsula. Could you do this for me?' The CEO indicates to the Prime Minister that she will send him a proposal which will totally restore rainforest to the areas in question within twenty years, and that she will send one of her experts to Putrajaya . *End of Scenario.*

2.The *environmental survey* industry assesses, monitors and audits ecosystems. This industry works from the macro level (such as from space through the use of remote sensing), through to micro and nano levels (for example, surveying contamination at molecular levels). The industry provides instant, detailed information and management knowledge relating to forests, fisheries, wildlife and other biota, and the management of atmosphere, seas and fresh water resources, soil and land.

Scenario: The year is 2010. The Earth Marine Survey Corporation, with its headquarters in Singapore, which is working under contract for UNEP and FAO as part of the 'Earth Watch' program, informs these organisations that its satellites have picked up a ship dumping toxic waste in the international waters off the Cook islands, and that a pollution plume is endangering tuna fishing stocks. This corporation has been surveying the South Pacific in all of its aspects for a number of years, and is responsible for managing the South Pacific Environmental Data Base of the Earth Environet system, which is , in turn, part of Earthwatch .

Earthwatch is the responsibility of a consortium of a number of UN agencies including, but all its programs are contracted out to the private sector. There are many environmental survey companies that are vigorously competing for business in this rapidly growing economic sector. The documentation of the Marine Survey combined with ground sampling taken by the South Pacific Forum Environment Protection Agency is used to prosecute the toxic waste dumper in the World Environmental Court, which is part of the International Criminal Court. *End of Scenario*.

3.The *resource renewal* industry is dedicated to working towards the complete elimination of waste. In approaching most waste issues the majority of governments and companies work with problem-centred strategies aimed at reducing waste and sequestering it so that it cannot threaten people and ecosystems. This ignores the big opportunities which exist from the mission-directed design and innovation of systems which totally eliminate waste. On a spaceship there are no receptacles to hold waste indefinitely otherwise the spaceship and its inhabitants would gradually be poisoned. There is no waste in nature: the waste of one species is the food of another. The resource renewal industry facilitates the reduction in use, and the re-use and recycling, of resources and the management of wastes. It seeks to mimic nature and turn all waste into food or resources for further use.

Scenario: The company *Universal Greening Organics* was established in 2004 with the aim of turning all urban organic waste into top soil. Top soil, of course, was in very short supply and very little of high quality was being created. This company separates unsorted municipal solid waste, recycling all the non- organic fractions and composts the organic fractions. It composts sewage sludge and organic matter from a diverse number of industries, including pulp and paper, food production and abattoirs and tanneries. All this material is combined with mineral fertilisers and soil microbes to create an organic pelletised fertiliser soil which is customised to different crops, climate regimes and soil types. As a result it is sequestering carbon in the soil . Large sequestration of organic matter into soil can have a significant effect on soil productivity, fertility and water holding capacity The same processes are also used to rehabilitate degraded land and land that is being repaired after development. As such, Universal Greening Organics is a member of both the Resource Renewal Industry and the Earth Repair Industry. The company produces what can be called both *soil carbon sequestration ware* and *carbon waste transformation ware. End of Scenario*

4..The sustainable energy industry researches, develops and markets those energy products, services and technologies which are based on the utilisation of renewable resources, and continuously improves energy conservation and efficiency. Its aim is that, by about the year 2020, all major processes will be able to operate within the energy limits imposed by solar income. It also aims to steadily increase the proportion of energy drawn from renewable resources.

Earlier in this paper I described in a *scenario* a solar energy to hydrogen innovation for use on a farm which illustrates this industry.

5.The *sustainable communities and cities* industry involves the design of sustainable communities, including the evaluation of the basic health and wellbeing needs of people living in urban areas. A guiding science for this industry is human ecology, which integrates the work of the architectural, building, industrial design and planning professions in the design and construction of sustainable schools, shopping centres, transport systems and houses. Imagine some of the innovations which could be developed in this industry. These could include *housing energy conservation ways and wares*, *housing renewable energy ways and wares*, solar *powered urban mass transit ways and wares*, parks *water conservation ways and wares.*

Scenario. The year is 2017. The city of Darwin decided in the year 2003 to create the city as an exemplar of a sustainable society in the tropics. the council recognised if this were done the city would only make itself more livable, and sustainable , but the city could become a global leader in the production of *tropical sustainable society ways and wares* . In this way it would get to the future first, from designing and building the pathway to creating sustainable prosperity in the tropics. Its hospitals it are exemplars of ecologically sound and efficient design and low energy consumption. The tropical sun is used in many different *ways and wares* to power a society which now is half way to living within perpetual solar income. The hospitals of Darwin are world centres for tropical health and medicine. The same applies to just about every aspect of design. The city is in essence a world centre of tropical knowledge . The Charles Darwin University is full of

people with expertise not only in their own traditional fields, but in also in how this knowledge can be customised to assist in creating sustainable prosperity in the tropics. Students from all over the tropical world come to study at Charles Darwin University. Now in 2017, the city is the home for the Darwin Prize which is given annually in a number of categories. It is now the worlds most famous award for innovators who make outstanding contributions towards creating sustainably prosperous society in the tropics and for adding to tropical knowledge. *End of Scenario.*

In 2002 I worked with the Government of the Northern Territory in Australia to develop such a scenario. Tropical knowledge is now one of the building blocks to guide the future of Darwin and the rest of Northern Australia.

The 21st Century Leader

Many of you will no doubt know the work of Gary Hamel and C.K. Prahalad, and particularly their book *Competing for the Future.*. One of their core ideas is *success will go to those who get to the future first*. I share this view, even though I think that competitiveness is a more complex and culturally rich concept than Hamel and Prahalad make it out to be.

I am also reminded of comments the President of Columbia University in the 1890s. He noted there are a few people who *make things happen*, there are rather more who *watch things happen* and there is the rest of humanity who say *what happened*? The combined wisdom of these two core ideas is: be first, innovative and competitive, and, be bold, courageous and persistent. Even this combining of two ideas into one is simplistic, as I will show in this address and this background paper.

Much of my own work is dedicated to working with those individuals, organisations, communities and nations who find themselves in the third category and who would like transform themselves so that they can comfortably live in the first category and thrive from doing so.

If people wish to succeed in the 21st century they must make three journeys. Those of you who have children could use this process to help them choose successful and appropriate career and life paths for themselves, or alternatively make a significant change to your own life and career path.

The first of these involves insight*, understanding oneself.* This involves undertaking what I call a *Destiny Probe*.

The secret to a successful life is to understand what is one's destiny to do, and to do it.

Such simple but important words by that father of mass manufacturing Henry Ford.

Destiny has two elements what one is good at, aptitude, and what one loves doing, passion. Fulfilling one's destiny defines ones *work* , doing what gives meaning to one's life . The route to success involves turning one's *work* into one's *employment*, to generate a living from doing one's work and fulfilling one's destiny. When you make a life's journey it is insight and self knowledge which increases to accompany accomplishments in the outside world. You develop your own capacity to make a difference as you learn how to fulfil your destiny.

What is your personal destiny? What is the destiny of Environment ACT? It might be quite different to your current self image. You wont know until you dig deeper and have a conversation about your destiny.

The second journey is *foresight*: using one's imagination to travel into the future in order to access knowledge about emerging possibilities, opportunities and threats. It also involves developing new innovations, new products and services which will demanded by these merging markets of the 21st century. And it involves organising ourselves so that our internal culture, organisation and our external behaviour is responsive to 21st century values, ethics and practises. We can't succeed in the 21st century with a 20th century work organisation and culture, and with behaviours which are inappropriate for the times.

The third journey we must take is to reflect on where we have come from, and how we arrived at where we are now. We must understand our own history and experience; *hindsight,* learning from past success and failure. I think that Australians, compared with many other cultures, have considerable difficulty in learning, becoming wise, from experience and from reflection on their experience.

George Santanya said

Those who do not learn from history are condemned to repeat it.

How often do you contemplate and reflect after making a mistake or fail to realise an aspirations, and seek to learn and make changes which result from this learning. How often do you accept responsibility for our mistakes and discuss these openly with your colleagues, partners, friends and families: not as a blame exercise but as a learning exercise.

One of the key issues we must understand is why we humans find that dealing with change so difficult, why a common response to change is to resist it

We humans do not like change. For Palaeolithic humanity change meant floods, earthquakes, volcanic eruptions, famine, wars and epidemics. Our biological inheritance is to fear change; it is encoded in our genes.

Biologically speaking we are much better at being than becoming, and I think we all need to be become better at learning to become including learning how to get to the future first. This is not a prescription for joining a dog eat dog competitive society as some have accused me of advocating. In nature there is competition but there is also cooperation. In life we need to become good at both of these and also become wise enough to know when it is better to be competitive and when to be cooperative.

Therefore if we wish to make a difference in our own lives and for the lives of others, both in work we undertake what I call *destiny probe* (*insight*) , *futures quest (foresight)* and *wisdom search (hindsight)*..

By fully embracing *insight*, foresight and *hindsight* a person can transform themselves from a life as *future taker* and *pathtaker* to one of *future maker* and *path maker*. Many successful people do just this, such as great entrepreneurs and artists. What is inside is expressed by actions in the outside world. Insight must precede and accompany foresight.

Because I am a futurist many young people ask me to help them make decisions about their careers. They want to know where the jobs will be in the future so that they can plan their career path . I tell them that 70 % of the job categories at the time when they are in mid career have yet to be invented and many current job categories will have disappeared by then. The more auspicious and effective way to develop your career paths is to first look inside yourself, discover your destiny, and seek to make your career pathway around fulfilling your destiny. Fulfilling one's destiny defines one's work, that which one does to give meaning to one's life. The next step is to then turn one's work into one's employment, thereby generating financial security from one's work. This you do by matching your work to emerging industries, job markets and job categories; thereby developing a fulfilling career path from realising one's destiny.

Ralph Waldo Emerson wrote;

Do nor follow where the path may lead
Go where there is no path and leave a trail

I don't claim that this should be the journey for everybody. Many of us are content to take life as it comes, and I personally make no judgments about anybody's chosen way of living. I know that there s much one can and should do to embrace the present and to be fulfilled in the present, smell the roses, achieve a harmonious balance between *being* and *becoming*. Much of my own work has been directed towards getting this balance right in myself.

However without of a sense of *becoming*, of forward purpose incorporating self transformation and growth, and through this sensibly preparing for the future, we will be swept up and away, be disadvantaged be the unprecedented rate of change around us. The current rate of change means that if one wants to make a difference then one must commit oneself *to become* as well as *to be*. We will either shape our future or the future will shape us.

We humans do not like change. For Palaeolithic humanity change meant floods, earthquakes, volcanic eruptions, famine, wars and epidemics. Our biological inheritance is to fear change; it is encoded in our genes. Biologically speaking we are much better at being than becoming, and I think we all need to be become better at learning to become including learning how to get to the future first. This is not a prescription for joining a dog eat dog competitive society as some have accused me of advocating . In nature there is competition but there is also cooperation. In life we need to become good at both of these and also become wise enough to know when it is better to be competitive and when to be cooperative.

The future is part change part choice. How much of each of the proactive or reactive approach to strategic action we prefer to embrace in out lives is a personal decision.

But Goethe in *Faust* pointed out that the bold inherit the Earth: it is better to be victor than victim : and the journey from *change taker* to *change casualty* can be a short one.

There is leadership in all of us not just some of us. The difference between *change taker* and *change maker* is about the difference between each of us as manager and leader. Each of us are both but we each choose to balance between them in our lives and work. This is due to the different ways we think, how we use our *head power*; and whether we are right or left brain dominant, I encourage my clients to assess their thinking and learning styles by utilising the Hermann Brain Dominance Instrument, which for me is the best diagnostic tool available to assess our relative strengths as manger or change taker versus leader or change maker.

Imagination in foresight; Walking into the future.

It we are to transform ourselves from *future taker* to *future maker* we must also recognise is the importance of imagination.

If we want to create a future we must first imagine it

There are also consequences of not imagining the future.
Those who do not live in the future today will live in the past tomorrow.

Albert Einstein said:

Imagination is more important than knowledge.

Here is a scenario which illustrates how ones uses imagination to understand the future:

Scenario The year is 2010 and you are going to buy a new car. There are two cars on the showroom floor. This is a petroleum-powered car and it is a fine piece of European technological excellence. It is quite environmentally friendly and emits only sixty percent of the carbon dioxide that was emitted by cars manufactured ten years previously. It is also very safe.
The second car is a solar / hydrogen-powered vehicle .If everybody in the world drove one of these cars, our cities would have much cleaner air and no photochemical smog ,and the rate of climate change would be reduced by 40%. Which car will you buy? *End of Scenario*

By visiting the future this way, in your imagination you can tell a great deal about you would react in different future circumstances.

Traditional market analysis emphasises trend projections into the future: a form of what I call *probable futurism*. This assumes that the future will mostly be composed of a continuation of past trends, whether this is desirable or not, and that one must be a manager and respond to these probable-future projections, rather than be a leader who sets out to realise a preferred-future. This 'walking into the future' scenario operates in a totally different way. You are asked to walk out into the future and to utilise two facts which you know to be true. The first fact is your recognition that values change slowly. You can take your own values, intelligence and intuition a little more than a decade into the future and know that your values will be only slightly different. The second fact is that you recognise that technology changes fast, so it is possible to take your present values seven years ahead and confront a totally different technological scenario.

Destiny probing, aspiring for thrival and growing thrivability are some of the early concepts I developed to help people to make a difference for themselves and others. I knew was what is inside us as well as what is out there is critical if one wants to be an effective shaper of ones own future. And I knew that most futurism did not consider these issues at all and that it ignored aspirations and hopes , the very feelings which actually are a the centre of all those songs about the future. That seemed to be totally unbalanced, even crazy.

During my years as a CEO of government departments I had written and co written many strategic visions for governments. I was always being told that many of these strategic visions were not pragmatic enough, they aimed too high.

I learned something else from this. I know the importance of realism and pragmatism; I also know how lack of vision and failing to commit oneself and one's organisation to lofty and inspiring goals can result in mediocrity and pedestrian achievement. There are some people who are uncomfortable with designing idealistic visions and seeking to realise them. My answer to such people is to ask them to try to understand the difference between the setting of goals and the evaluation of outcomes. One should always be idealistic and bold about goal-setting, if one lowers one's aspirations under the pressure of pragmatism one will quickly find that the energy and commitment to realising one's goals also diminishes. It is always important to keep the commitment level high. However, it is also important to be pragmatic about outcomes. If only half a loaf is the outcome when a whole loaf was anticipated, celebrate the fact that there is half a loaf and redouble one's efforts and work smarter to try to gain the other half of the loaf. It is important never to temper your goal-setting with pragmatism, only your results.

These differences of approaches can be seen in how we relate to physical planning. I had several major differences with others about the future of some of our cities, and about our different views about the importance of trend projections of future population growth as an informant of future development. Most planning involves projecting present populations trends into the future, predicting a *probable future* population and then deciding where and how these additional inhabitants should be accommodated. The result is a self-fulfilling prophecy, whether or not this was the *preferred future* for the particular city.

An alternative strategy might involve deciding that the city is growing too fast already, or what an optimum population might be. Then policy might be directed to trying to slow down this trend or even reversing and negating it , while persuading would-be city dwellers to live in a regional centre instead. Policy then is directed at attracting people to other locations rather than housing the projected population in the city. I had huge difficulties convincing various ministers to be boldly careful to create a marvellous preferred future rather than dedicating policy making towards making a probable future merely less awful.

When I looked at the work of other futurists around the world I found some were *what will be* futurists such as Hermann Kahn. These are the *prophets, the forecasters*. They believe in predicting what will happen, what I call the *probable future*.

Others were *what should be* futurists, such as Buckminster Fuller. They are the *visionaries.* They outlined what should or could be the future: the *preferred future*.

George Bernard Shaw said:
Some people see things as they are and ask why,
I see things as they could be and ask why not.

We all have various degrees of powerlessness and powerfulness at different stages ion our lives, and in different situations, such as being powerful at home and powerless at work. Irrespective of how powerful we are now, how much of each *future maker* or *future taker* we are currently, we can always become better at shaping the future..

Leader and Managers: Probable and Preferred Futures: foresight

Now much of my work is concentrated on the development of leadership. Leaders are future makers and path makers, while mangers are future takers and path takers. All of us are part leader, part manager. It is important that all people learn the difference between them and to utilise both of these roles in their lives, not just one of them. The most important act of leadership is leadership of self. We cannot hope to lead others effectively if we are unable to lead ourselves. I know many so called leaders who try to lead others while making a total mess of their own lives. Australia is currently an over-managed and under-led country. It constantly puts managers in positions where leaders are needed. Many Australians fail to understand this critical difference between leadership and management. Education should first focus on encouraging students to become effective leaders of self before they become effective leaders of others. Leadership refers as much to how we plan our lives as it does to planning the work of others and responding to the world around us:

Managers and Leaders have different kinds of visions and ask different questions about the future.

The manager in each of us is most comfortable asking ask "What will the future be like? I call this the Probable Future or *que será* question. In over managed and under led Australia it is the question most Australians are comfortable with.

An alternative question is "What should the future be like. I call this the Preferred Futures question. It is the question leaders tend to ask. It is also the question that the average Korean, Japanese, Malaysian or Chinese will ask. It is the question for people who let their dreams play a role in how they think about the future.

You will appreciate that there is a big difference between these questions.

Mangers are *Probable Futurists*, Leaders are Preferred Futurists

What people who ask the probable future question are really indicating is that they have very little influence on the future of Australia. It is a fatalistic view, based on the thought that the future will just happen, and that one cannot shape the future, merely not get run over by it, or if one is smart, make a dollar out of it.

A second way people look at the future involves not the destinations which are envisaged, but the strategies required to get there. The current approach of most people most of the time is a *Problem Centred* one. This is usually the way of the manager. This involves working towards a future where present problems are lessened or removed. The aim is to remove or lessen present "bads" from the future rather than positively create "goods". The alternative way is to take a *Mission Directed* approach to the future: to create "goods" in the future, to set out to create a positive future. This is the way of the leader. As it is with the imbalance between probable and preferred futures, there is an imbalance between Problem Centred and Mission Directed approaches. The excessive weight given to Problem Centred approaches makes it very difficult to achieve anything like an optimal result. Again all of this involves using management skills where leadership skills are needed, or because we appoint managers to positions of leadership.

- Managers are *Problem Centred* people, Leaders are *Mission Directed people*

Here is a summary of management and leadership:

Managers	**Leaders**
Respond to change	Create and Shape change

Path Takers	Path Maker
Do the thing right	Do the right thing
Guided by Fate	Guided by Destiny
Control	Facilitate
Work *in* the organisation	Work *on* the organisation
Probable Futurist	Preferred Futurist
Problem Centred Strategist	Mission Directed Strategist

There are many other examples of imbalances between Problem Centred and Mission Directed approaches. The emphasis of medical approaches to health over health promotion is one, the emphasis on becoming less unsustainable rather than more sustainable is another. In the area of structural adjustment of our economy, most of the concentration goes to the Problem Centred *repairing the old* (modernising the existing industrial structure and infrastructures), rather than the Mission Directed *creating the new* (designing and building new industrial structures, industries and enterprises appropriate for the 21st century).

Many of the so-called economic and unemployment problems of Australia have neither economic causes nor economic solutions. They are cultural problems with economic, social, cultural and environmental consequences, and the solutions must be found at the cultural level. The biggest problem is the imbalance between Probable and Preferred Futures thinking, and between Problem Centred and Mission Directed approaches to the future.

People tend to change their behaviour because of two fundamental emotional groups, one is the axis of hope and fear and their more extreme soul mates, desperation and inspiration. (or related anger from hopes dashed) . Both hope and fear can trigger major changes of direction. The second pair of reasons are the emotional alternatives of love and hate (or related anger from rejection). In other words changing one's own strategic direction is base on some very simple emotional foundations., Fear and desperation are the tools used too often by the manager to create change. Hope and inspiration are the tools of the leader . We all know of strategies which are not realised. I submit that this is because they do not develop commitment. . They do not recognise that hearts must be moved, and that people must be motived, as well as ideas challenged and new strategies devised, if strategies are to be actually realised.

The leader uses the following process to create change: they develop vision, which is used to create hope, hope is used to create inspiration, and inspiration is used to create commitment .

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Peter is a former Executive Director for the Australian Commission for the Future. He held CEO positions in a number of public sector organizations over 15 years including two involved with Environment and Planning, and one with Industry and Technology, and he was also Chief of Staff of a Federal Environment Minister in Canberra for 3 years. He is Adjunct Professor of Intergenerational Strategies at the University of Queensland in both the UQ Business School and the School of Natural and Rural Systems Research, and is a Fellow of the Australian College of Educators, the Environment Institute of Australia and New Zealand, and the Australian Institute of Management. Peter is an elected Member of the International Union of Associations, based in Brussels, and is an Adviser to the De Bono Institute. He has been a Senior Adviser to the United Nations system ((including UNDP,UNEP, UNESCO) for more than 30 years, and including the 1993 Earth Summit. Peter is the author of the best selling book *Ideas for the New Millennium* (1998,2001) and *The Birth of Planetism* which will be published in late 2004/early 2005.

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