Nature&Society

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Editorial

Well, Australia has now ratified the Kyoto Protocol but the ice sheets melt ever more quickly, the oceans continue to die. In Australia itself feral rabbits and weeds flourish. Not much is happening as we wait for yet another economist's report.

Big business and insurance companies (at least some sections of these industries) have asked for urgent change to do something about curbing emissions, but there is no sense of urgency in government at the top. Yes, our new Government has lots of problems to attend to but don't they understand that in a dying environment economics will have no relevance?

Until people really understand that their wellbeing, their health, their very lives depend on an environment that provides all the life support that they need, they will do very little to support the environment. That understanding lay behind the formation of the Nature and Society Forum, which aims to spread that knowledge to more and more concerned people. This February is an important date for NSF for it sees the launch of our interactive website, biosensitivefutures.org, a site to help stimulate social change for healthy people on a healthy planet.

We have discussed the name, and worried over it, because there is no convenient, easily understood and recognisable word to describe what we are aiming to achieve. It is the same problem that has recurred at times, over the name of our organisation. Nature and Society Forum could be a static organisation studying society and nature as they are. The name does not say that we must look at the links between the two, and get people to learn, to really understand, that in the end our society is totally dependent on nature being healthy. If we persist in damaging nature with our insatiable appetites for possessions, for money, for never-ending growth, then we are digging our society's grave as surely as any glutton has ever dug his grave with his teeth.

Over the last half century many people have woken up to the fact that humans are severely damaging, even destroying, nature. Now to cap it all off we are changing the climate. Many individuals and many organisations have taken on the challenge to reverse this trend, some in their local area, others in specific cases: Save the Whales, Save the Rainforests. All these efforts are worthwhile, all these things need saving.

Some other organisations, such as NSF, are looking at the overall picture and saying that the problem is so big that unless we change society, then the problems are only going to grow bigger. It is people, particularly our industrial and post-industrial modern consumer society that is never satisfied, that must keep growing, that is the problem.

What sort of new society do we need? That's where Biosensitive comes in. This word is trying to describe a society in which the needs of people, and of all other species and the ecosystems of which they are part, are considered and looked after; they are not seen as resources we can exploit and discard at our will. The realisation must be that we are part of nature, not separate, and that we need the rest

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to be healthy if we want a habitable planet. We must build a society that is sensitive to the rest of the biosphere, a biosensitve society.

To achieve this society we have to take action. If we keep going with our current systems and mind frames intact, we will continue to destroy the planet that we know, and in the process any worthwhile future for humanity.

There has been a fiction that continued growth is what we need; if we don't have growth we won't be able to afford to save the environment. Sorry, but this just does not add up. In economic terms we are wealthier than ever before, but we can't even 'afford' to train or pay for our own doctors, nurses, dentists, teachers. We don't have enough tradesmen, but we have oodles of people employed in gambling and other less socially useful pursuits. It is not shortage of money, but a shortage of will and a completely wrong sense of priorities.

Study after study has shown that greater wealth has not made people happier. They have longer lives, because we have become very good at replacing bits and pieces of the aging human body, but large numbers eke out their last years in quiet misery. We have not solved the problem of aging brains or the growing number of degenerative diseases. Even in youth and the prime of life, many people are unhappy; our social system is obviously not satisfying their needs. Now I agree that humans have a unique ability to make themselves unhappy (our consciousness can be a curse), but surely we could develop a society in which happiness and contentment are more common than they are today.

Our aim for a biosensitive society is that humans should have a more contented, healthier, satisfying society by eliminating the emphasis on material goods and energy-gobbling pastimes. Instead we need a just, equitable society that provides plenty of opportunity for agreeable social interaction, meaningful work, moderate comfort for all, and sufficient physical exertion to keep bodies and brains healthy. This society must satisfy innate human needs without trashing the planet, so that we keep alive the various biosystems, with their fascinating inhabitants, which together make Earth such a wonderful place.

To achieve a biosensitive society we need to reach as many people as possible. We encourage you to take part in this project: go to the website, tell everyone you know who may be interested, and take part in the roundtable discussion. Help to make Biosensitivity as much part of the language as biodiversity already is, so that politicians, policymakers and everyone else can combine to move society in the only direction that can ensure a future.

Jenny Wanless

Humans are using about 50 per cent of all the life on Earth—about half of all the microbes, insects, plants and mammals on the planet are being sucked into the systems that feed our needs. Think of every single living thing on Earth as a river. We're diverting half of that river to suit our needs ... While we're busy sucking up all that net primary productivity, there are a whole mess of other critters—from little bacteria and beetles to salmon and tigers—that can't get what they need. Increasing clear-cuts, overgrazed grasslands, eroding farmlands, fishing boats strip-mining the oceans and huge toxic plumes radiating out of our cities: our current overuse of nature is driving species to extinction all around us.

Alex Steffen
Worldchanging, 2006 (p. 16)

Comparative risks

Different people will legitimately reach their own conclusions because we do not have an agreed view of acceptable risk. We were shocked by the Bali bombing when eighty eight Australians died, most of them young people. But every three weeks on our roads about 100 Australians die, most of them young people; far from being shocked, we refer to "the road toll", as if this carnage was the appropriate price to pay for the privilege of using roads. So there seems little prospect of there being community agreement about the acceptability of nuclear power, even if we could say accurately what the risk would be.

Ian Lowe, *Reaction Time,* 2007, p74

Thanks to NSF member Jill Redwood for the illustrations in this edition.

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Tel: +61 (2) 6125 2526

Fax: +61 (2) 6125 1756

E-mail: office@natsoc.org.au

Website: www.natsoc.org.au

Where we are:

Room E-319-A in the old building of the John Curtin School of Medical Research at the Australian National University in Canberra.

From the entrance use the intercom phone to call the NSF office on extension 52526.

By car: There is a two-hour car park in Balmain Lane, 300 metres to the south of the office.

By bus: The 34 bus from Civic drops you off at the foot of Eggleston Road. Walk 250m south up the hill and turn right; from there the entrance to the building is visible.

By bicycle: Plenty of bicycle parking on the ANU campus.

Energy truth

For most of human history, the resource that has been in shortest supply has arguably been energy. For the last three hundred years, and especially for the last three-fourths of a century, that's been less true than ever before. Today, however, the highly concentrated and abundant energy resources stockpiled by the biosphere over the last half billion years or so are running low, and there are no other resources on or around Earth at the same level of concentration and abundance. Innovation is vital if we're to deal with the consequences of that reality, but it can't make the laws of thermodynamics run backwards and give us an endless supply of concentrated energy just because we happen to want one.

John Michael Greer, *The Archdruid Report* (www) 12 September 2007

Forthcoming NSF meetings

For the latest information visit our website www.natsoc.org.au and click on "What's On". There you will also find a link to maps showing the venues.

Wednesday 20 February 2008– launch of our new Biosensitive Futures website. The launch will be by Deb Foskey MLA at the Legislative Assembly rooms beginning at 5:30 pm. The keynote talk will be given by Professor Judith Whitworth of ANU's John Curtin School of Medical Research. Dr Foskey will launch the website. Other speakers will include Stephen Boyden and Frank Fenner. Refreshments will be provided.

Wednesday 19 March 2008 – Tony McMichael – "Eat Less Meat and Beat the Heat: Re-balancing the Energy-Health Equation". Tony, another NSF member, Colin Butler and others recently had their article "Food, livestock production, energy, climate change, and health" published in the Lancet. Tony's talk will build on that article and the international response it invoked.

Venue: the ANU Emeritus Faculty. A map showing the venue can be found on the ANU website. The building is called the Fellows Lane Cottage and is building 3T on this map. Fellows Lane runs off Fellows Road. The cottage is to the immediate north of the Law Faculty buildings and east of the South Oval.

Wednesday 16 April 2008 – an NSF Members' Workshop on NSF's Biosensitive Futures website - purpose, progress, prospects and participation.

Venue: the ANU Emeritus Faculty.

Wednesday 21 May 2008 – Paul Tranter will talk on children in the future, the media and family resilience. More details our next edition. Those members who enjoyed Paul's talk to us two years ago will be delighted to welcome him back.

Venue: the ANU Emeritus Faculty.

Health and community

I believe that the community—in the fullest sense, a place and all its creatures—is the smallest unit of health, and that to speak of the health of an isolated individual is a contradiction in terms.

Wendell Berry on p. 52 in
The Plain Reader: Making a Simple Life (1998)

Future thoughts

For our Christmas edition we asked readers to give us their good news stories, or visions of a better future. No one did. Does this reflect a general sense of doom and gloom amongst NSF members? Well, no!

There is good news around. Janis Birkeland, who has been working on the Australian National Sustainability Initiative for many years, thinks that it is possible to construct buildings that are not just five stars, or even ten, but ones that will actually increase the ecological services of an area, rather than damaging them.

Derek Wrigley's booklet *Climate Change Needs Housing Change* is reaching more and more people, although it has yet to have any impact on builders and the housing industry.

Walter Jehne thinks it is quite possible to improve land use to sequester much more carbon in the soil thus ameliorating the climate change situation. Like many of these measures it has far more than one benefit, as it would also improve soil structure, water holding ability and fertility.

(You can look up Janis' ideas, along with Derek's and Walter's, on biosensitivefutures.org)

A member who can see good resulting from Peak Oil and the decline of our car-based culture, is Paul Tranter. You can read a brief account of his thoughts on page 6 of this issue.

In the wider community there are also inspiring things being done. The Swedish film *As it is in Heaven* portrayed a small community, not functioning very happily, in which individuals were changed by the empowerment of singing. This is happening in Australia with the Choir of Hard Knocks. People who had little joy in their lives, through unemployment, illness or other causes, have gained enormously by being brought together to sing.

Now Sing Australia's founder and conductor, Colin Slater, has brought similar joy to disadvantaged people in Canberra through the Jumpin' Gateway Choir.

Colin Slater has also taken the joy of singing to people in small rural communities who have been doing it tough through the long drought.

Last year he tried his idea out in Dubbo (NSW) and Birchip (Vic). He took fifty singers from other Sing Australia choirs to have a good singing session with the locals in small towns in the regions neighbouring these two major centres. Then he selected ten people from each of the little towns to have some singing sessions in their central town, so they could gain confidence and skill. They went home to start choirs in their own little towns, and were equipped with a Sing Australia CD, *Songs around the Piano*, to make up for the probable lack of a conductor or musician.

It is very hard to be depressed when actively involved in singing, dancing or other cooperative group activity. It strengthens social bonds and provides support: much more uplifting than listening to a recorded artist, or sitting and watching TV.

Modern life has much going for it, but it has lost sight of much that was good before. In a new, sustainable biosensitive society people may well rediscover the bonds that came from such activities.

Jenny Wanless

> *It is neither possible nor desirable for all humans to live as wastefully as Americans now do. It is possible for all people to live at the level of resource use that prevailed in Australia in the 1960s; not a time of Neolithic privation, but a less wasteful era than the present one. We lived in smaller dwellings, each on average occupied by more people, we used less electricity and water, we were much more likely to use public transport or small efficient cars, we ate more fresh produce and less processed food.*
>
> *Ian Lowe,* Reaction Time, *2007, p27*

Limits

The core concept that has to be grasped to make sense of the future looming up before us, it seems to me, is the concept of limits. Central to ecology, and indeed all the sciences, this concept has failed so far to find any wider place in the mindscape of industrial society.

The recent real estate bubble is simply another example of our culture's cult of limitlessness at work, as real estate investors insisted that housing prices were destined to keep on rising forever.

John Michael Greer *The Innovation Fallacy,*
from his blog, September 2007

The fate of trees

Suburbia is where the developer bulldozes out the trees, then names the streets after them.

They kill good trees to put out bad newspapers.

Found on the internet, January 2008,
author unknown

Book Review

Reaction Time: climate change and the nuclear option

Ian Lowe. Quarterly Essay 27, Black Inc, Melbourne 2007

Reaction Time provides a thorough and considered response to the proposal that nuclear power would be a suitable option for Australia to pursue. Although the likelihood of nuclear power in Australia has receded with the change in Government, the arguments are still very important. Recently South Australia decided to open another uranium mine and Britain is negotiating for the building of new plants to supply electricity; uranium mining and nuclear power plants in any country can have worldwide ramifications.

Sections of the book deal with the present situation with nuclear energy, its history, and economics, and the challenge of global climate change. Lowe discusses whether developing countries need nuclear energy to enable them to catch up with western societies. He deals with the arguments for its use to provide base load power, or whether renewables can do the job. In answer to this problem, Lowe replies that the base load case has been overstated and alternatives can be sufficient.

> *In the short term it is possible to create the illusion of economic progress by liquidating our natural capital, but there is a fundamental problem with such an approach. Mining operations are inevitably boom-and-bust because the resources are systematically depleted.*
> *Ian Lowe,* Reaction Time, *2007, p10*

The politics of nuclear power are also examined, along with the threats it poses and the problems of waste disposal. In Lowe's opinion nuclear power is a dangerous distraction that has been used to divert attention from more realistic, timely and safer options.

Along the way he counters some of the popular arguments that you are likely to encounter in discussion of the human-induced nature of climate change, dealing with the type of argument put forward in *The Great Global Warming Swindle.* For one I have heard several times, that volcanoes are responsible for more carbon dioxide than humans are, Lowe says the real figure is that volcanoes on average only emit about one fiftieth of the quantity we do. Lowe also deals with nuclear power's supposedly green credentials.

After Lowe's analysis of the economics of nuclear power it is very hard to see how the British Government thinks new nuclear power stations will be possible without government subsidies. But then, maybe they don't think so, because they seem to be accepting that government will have to deal with decommissioning and waste management, two hugely expensive processes. The Government is effectively suggesting that these problems be left for future generations to pay for.

Lowe opines that '*Since every gram of uranium exported increases the problem of radioactive waste and increases the amount of fissile material that could be diverted to weapons or dirty bombs, we should be phasing out the industry rather than contemplating any extension of it.'*

He also points out that *'...it is not rational to make decisions solely on the basis of economic issues, ignoring social and environmental questions. But I can understand why other people make different choices…Different people will legitimately reach their own conclusions because we do not have an agreed view of acceptable risk,'*

Whether you have yet to make up your mind on these issues, or you know very firmly where you stand, this small, but well documented book is valuable reading. It may help you to clarify issues or to answer questions, and would be handy to lend to those who still quibble about the various issues addressed.

Jenny Wanless

More from *Reaction Time:*

Promoting nuclear power as the solution to climate change is like advocating smoking as the cure for obesity. That is, taking up the nuclear option will make it much more difficult to move to the sort of sustainable, ecologically healthy future that should be our goal. (p19)

There is no objective truth about the future performance, cost and safety of nuclear reactors. There is a range of defensible opinions, as well as some that appear indefensible. Even when dealing with the history, some people are selective in choosing evidence that seems to support their position. We are all influenced by our experience, our culture and our values in trying to make sense of complex and uncertain issues. So you should read all statements about the nuclear issue - including this essay – with a critical eye.

Children and Peak Oil

Ironically, the collective impact of many parents 'keeping their own children safe' is to create an environment in which every child is worse off, both in terms of traffic danger and stranger danger.

Parents are unwittingly exposing children to increased danger from: lack of physical exercise, increased risk of obesity and other health problems (e.g. heart disease), lack of spontaneous play opportunities, increased exposure to pollution (indoor, in-car and air pollution), and reduced independent mobility resulting in a lack of sense of connection to the local environment and community – a lack of a sense of place. The strategy of 'protecting' individual children by driving them to more places has the impact of making more children "fatter, sicker and sadder".

> *Peak oil may provide an opportunity to conceptualise an environment in which children become important social agents, able to express themselves in the present rather than fulfilling parental expectations of successful investment and training for future adulthood.*
>
> *Tranter and Sharpe, in Children and Peak Oil*

So wrote NSF member Paul Tranter and his colleague Scott Sharpe in their paper "Children and peak oil: an opportunity in crisis", recently published in the *International Journal of Children's Rights.* They discuss the possibility that children may actually benefit as oil becomes scarcer and more expensive. Much of what comprises our modern life – globalisation, frequent and rapid travel, imported food, designer clothes and toys – will be curtailed. In a post peak oil world children will no longer be able to be ferried around, rushed from one activity to another.

> *The conception of children in western societies as 'vulnerable' has been underpinned by the availability of cheap oil. Cheap oil has not only profoundly influenced the lifestyles of adults and children, but it may also have reinforced the conceptualisation of children as in need of protection from the 'dangers' of modern society.*
>
> *Tranter and Sharpe, in Children and Peak Oil*

Rather than seeing this as a disaster, we can see it as an opportunity to reinvest in our local community. Children could be fully integrated back into society, rather than being separated out into a special category, with specific play areas and artificial environments. Although parents today probably do not realise it, the collective impact of ferrying five-year-olds across town to play soccer with other five-year-olds is making our cities less child-friendly: there is more traffic danger, more pollution, and less time for the unstructured play that is vital for children's development.

The post peak oil future will see such activities severely limited. Younger children will perforce stay fairly close to home, playing with children of mixed ages. Children will also probably be more engaged in general activities, such as helping in growing and distributing food locally. As cycling and walking replace much of car transport the roads will become safer places for children and adults alike. Local communities will redevelop and people will tend to look out for and feel more responsible for each other, including the local children.

The result could be that children develop a sense of connection and involvement in their local community. They would be freer to explore their own neighbourhoods and cities in ever increasing circles, as they mature. Food and basic services will be available to them within these areas. They will understand where food comes from, the necessity to avoid waste and the importance of the seasons, unlike a surprising number of people in today's society. They will be seen as capable social actors who can contribute to the way society copes with peak oil.

Children should be given a say in how society responds to peak oil and they may well suggest solutions to local problems, and cope better than some of the adults.

The full paper:

Tranter, P. and Sharpe, S. (2007) Children and peak oil: an opportunity in crisis, *International Journal of Children's Rights*, *15*, (1), 181-197.

is available on the web at:
http://www.pems.adfa.edu.au/~s8000097/children_peak_oil.pdf

Our personal view is that the classical idea of medicine is to improve health and well-being of all, regardless of ability to pay, and to reduce suffering while doing no harm. Through our unrestricted use of energy and resources in the health care industry, as well as our production of greenhouse gases, we are actually contributing to the ill-health of our planet and ensuring certain future suffering of the Earth's inhabitants.

Dan Bednarz and Kristin Bradford in *Medicine at the crossroads of energy and climate change.*

The Sustainability Science Team

This article updates previous reports on the work of the Sustainability Science Team (SST). Readers will recall that SST is the consulting group set up by Nature and Society Forum (NSF) and the Australian National Biocentre (ANB) some six years ago. SST was set up to bring together the diverse skills of individual NSF and ANB members and apply them to some of the very real issues arising in the corporate, government and community sectors. SST's focus, like NSF and ANB, is the interface between nature and society. What is different is that SST gets paid for the services it provides and reinvests the proceeds into sustainable initiatives.

Contractual obligations, confidentiality requirements and the need for professional indemnity of members involved in SST's consulting projects, especially in relation to the business sector, require SST to be separately incorporated. Initially it was a fully owned subsidiary of NSF and ANB but this arrangement proved unworkable and ownership was transferred to a number of members of the team so that now SST is completely independent and can commit itself to upholding the highest standards of scientific rigour and impartial advice.

... [the Landcare group] had—and I'm making up the numbers—planted 400,000 shrubs in the year that I was out there. And of course in the day I was out there Queensland took down 418 million shrubs clearing land. So one of the things you want to watch out when you're talking about change is, don't focus on the little success stories which show what could be done but always measure them against what the global results are, what's the overall outcome?

Paul Ehrlich extemporizing at the Ecological Society of Australia conference, Perth November 2007

Of course SST is a corporate member of NSF with a life membership and continues to work closely with individual NSF members.

Over the last six years SST has been involved in some thirty projects about half of which have been completed and half in progress. A few of the ongoing projects are still in the early development stage. It has also set up two new groups: *Healthy Soils Australia Ltd*. a coalition of farming, business and community interests to promote soil health and *Carbon 4 Market*, a privately owned company set up to commercialise the verification of bio-sequestered soil carbon.

Examples of completed work include an ecological assessment of urban sprawl versus infill for the ACT government; developing a decision-support tool for Natural Resource Management ("*Mapping Regional Metabolism*") for Land and Water Australia, and the development of a range of building materials from recycled wastes for the construction industry. Work in progress includes the development of *autonomous water systems* (that use biological processes to purify and recycle water) and a number of *bio-conversion* techniques that use biological processes for nutrient cycling from organic waste streams.

We are also working on climate change. Readers may recall recent articles in this Journal by Walter Jehne on the biological aspects of climate change and the possibilities this offers for mitigating its worst impacts through the direct management of vegetation.

SST also has a capacity to undertake life cycle analyses, environmental impact assessments and feasibility work, but its main activity involves *eco-innovation*: the redesign of the infrastructure and the goods and services provided by the economy in such a way that they are ecologically sustainable.

In our local area, a recent project has been to develop, with others, a waste recycling system for Palerang Council. It was an interesting exercise and gave a real insight into the democratic process at the local government level. While the elected council members strongly supported our recommendations, ***none*** of them were implemented.

Currently we are about to start work with a group of local governments in the Capital Region exploring systems for converting household organic kitchen waste into soil conditioners and delivering it on farm.

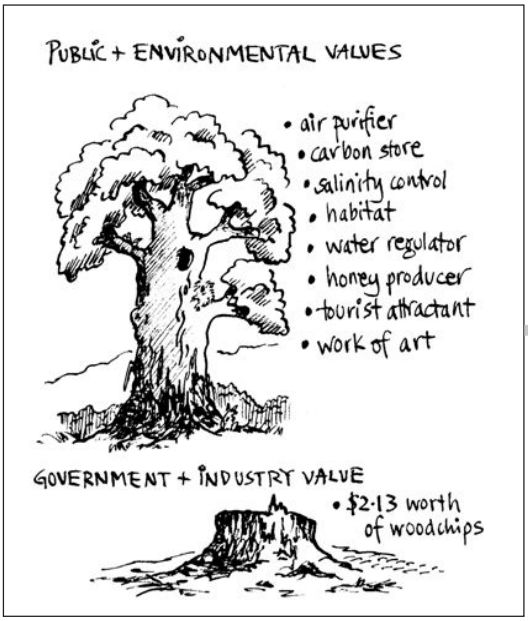
Another project, a little further from home, is located in Bathurst where SST is working with the Sisters of Mercy to develop a future strategy for their stunning property overlooking the city: St Joseph's Mount. It was built in the 1870's and for almost a century served as a house of formation for the sisters. The Sisters are planning to establish an ecological learning centre on the site. Dr John Harris has taken on the management of this project as an SST staff member.

Over the 6 years SST has involved a dozen or so NSF members in various projects and employed

around 8 people at various times. Turnover is approach $0.5million.

A major SST project is to support the establishment of Healthy Soils Australia (HSA).

Many people think of soil as the physical stuff that keeps plants standing upright, but it is much more than that. Soil is alive with trillions of minute organisms that recycle nutrients, purify water and help plants grow. Soil determines the quality of food we eat. It is the engine room of life. While plants convert solar energy into sugars and other substances (through photosynthesis) they can only do this sustainably through the processes of nutrient cycling. In healthy soil the bio-mass below ground can exceed what is above. This is much more than the root mass of the living plants on the surface which represents about half of soil organic matter, the other half consists of microrganisms, fungi and stored organic matter, some in a form that has residency periods of around 1000 years.



In Australia our agricultural soils are in trouble. They are increasingly being poisoned with salt and chemicals. Vast areas are compacted and eroded. Our soils are tired and overworked.

And Australia is not alone. After 10,000 years of farming, our agricultural methods ranging from slash and burn agriculture to intensive irrigation have changed global ecosystems far more than the post WW2 spike in fossil fuel burning. Working with members of Healthy Soils Australia, SST is involved in:

Mosaic land management

- Spatial analysis: innovative technologies to map land and soil properties
- Bio-assay: new diagnostic tools to measure soil activity
- Soils conditioning: application of specific treatments to increase soil health.

Water management

- Water saving through enhanced soil structure
- Chain of ponds restoration: restoring the buffering and water purifying capacity of soils – what we call '*hydrolation*'.
- Salinity management: using biological processes to immobilise salt
- Autonomous water systems: small locally managed water supply and purification systems.

Biomass futures

- restoration shelterwoods
- carbon credits
- biodiversity management.

But the most important project SST is involved in is restoring soil health through bio-sequestering carbon. This process gives us a way for both mitigating and adapting to climate change with improved agricultural productivity as a bonus. Carbon farming promises to be a major new technique for restoring eco-system health.

John Schooneveldt

Minimising meltdown

Bob Douglas

G'dday" I said absent-mindedly to the other elderly man in the caravan park bathroom.

"Yes it's a good day if you wake up." he replied.

I was jolted by his response as I returned from my Christmas holiday, having just heard the sobering news of my much younger brother's sudden and unexpected death. I had also been reading Thomas Homer Dixon's *The Upside of Down* which argues that the stresses that are building in our global society are leading us inexorably to some form of civilisation meltdown. Populations and their economies are continuing to grow exponentially at the expense of the environment on which human survival and that of all of the millions of other species depend.

Waking up, and feeling strong, well fed and challenged for the day ahead is indeed a privilege.

As 2008 begins, for most Australians it is a very good day.

But, as Dixon points out, the foreshocks of massive social earthquakes are rumbling and the risks of not waking up are increasing for all of us, not only people in Kenya, Sudan, Pakistan, Iraq, Palestine, Israel, China and the USA, but for humans everywhere. A major meltdown of some kind, says Dixon, is as inevitable and unpredictable in its precise timing and nature as was the collapse of the Roman Empire and for some of the same reasons. That society was utterly dependent on its limited energy sources (grain and alfalfa) to maintain its complexity, its rigidity and its elaborate and profligate lifestyle. When the shocks of the barbarian invasions came there was no resilience to facilitate essential restructuring of their society.

Our modern vulnerability is increased by our global connectedness through modern technology, growing and obscene inequality of opportunity, the homogenisation of a global consumerist culture and the possibility of weapons of mass destruction falling into the hands of well organised cells of unscrupulous renegades.

The "upside" of Dixon's "down" is that human systems can be made adaptive to the inevitable shocks that lie ahead. Truly adaptive systems can recover from external shock because they possess the attribute of resilience. Non-resilient systems can be so efficient and rigid that they strangle on their own inflexibility when challenge comes along. The consequences for New Orleans of Hurricane Katrina are an example of a society in denial and lacking resilience. The take home message according to Dixon is that we humans need to anticipate breakdown and be ready when it comes, to build a new and stronger civilisation from the breakdown of the old. By building resilience into our increasingly complex and inflexible social order (sometimes at the cost of economic efficiency) we will be able to minimize the extent of societal meltdown when the social earthquake arrives.

Hugh McKay in his latest social analysis *Advance Australia Where?* wrote in July 2007 that he is seeing evidence that Australians are awakening from a decade-long dreamy state of disengagement from the reality of the world's problems. Our preoccupation with household renovations and consumption is starting to give way, he thinks and hopes, to a growing willingness to contemplate the seriousness of the human predicament and to confront the reality of climate change and increasing human inequity. Was this a decisive factor behind Australia's change of government on November 24th? Who knows?

The next few honeymoon months are the new prime minister's great opportunity to help build resilience into the fabric of Australian society and prepare us for the shocks and changes that will come as the human world runs out of oil, as climate change bites with greater and greater ferocity and as our ecosystems are put under impossible pressure to feed an expanding human population.

How can this be accomplished? Visionary leadership is part of the equation but only part of it. According to both Dixon and McKay, it must be accompanied by activated communities which are ready to question the values which currently drive our human world. We need to develop what Dixon describes as a "prospective mind" which rebuilds neighbourhood supports and develops social and environmental responsibility. Australia is no longer an island in the metaphorical sense. We must devise new ways of sharing what we have with the poor of our own country and the world. Our current record of doing this is abysmal by all international benchmarks. We will need vigorously to challenge the current economic orthodoxies and develop new ways of sharing the world's limited resources with 6.6 billion others.

> *Our economic lives underpin our sense of who we are – that was one of Gandhi's great insights. Change those daily habits a little and you can change our habits of life a lot. We are in enormous environmental trouble because we've spent decades trying to meet non-material needs (for status, for affection, for respect, for camaraderie, for security) with material means.*
> *Bill McKibben* A man for all seasons: What we still need to learn from the example of Gandhi

The good news is that scientists are beginning to understand better what will make us resilient to future shock. The difficulty is that becoming resilient means questioning much of what we currently hold dear. Many believe that it will take a catastrophe to move us from our current trajectory. Perhaps so, but why not be prepared?

At least our children will have a good day!

Bob Douglas is convenor of NSF's SEE-Change project and Chair of the Board of Australia 21.

Farrago

Biochar

The International Biochar Initiative is a group of scientists, policymakers and farmers who plan to use organic-rich waste (vegetable peelings, disposable nappies, garden clippings) to produce fuel, improve the soil and sequester carbon.

Heating organic matter in a kiln without oxygen they can make a biofuel, dubbed pyrolytic oil, as a substitute for diesel. The charcoal left behind (biochar) is high in organic carbon and can be used as a soil improver. It will take hundreds to thousands of years to break down in the soil, storing the carbon in the meantime.

A recent study showed that biochar in the soil might also reduce the release of nitrous oxide from soils treated with nitrogen fertilisers. Nitrous oxide is several hundred times more potent than carbon dioxide as a greenhouse gas.

New Scientist, 20 October 2007

Lewis Lapham quotes with approval the title of Neil Postman's thesis for life in the technological consumer age: "Amusing Ourselves to Death". He says young Americans "think they can be anything they like—TV anchormen, surgeons, detectives, football players—because they see the role played on TV. They think they can play the role. They know the pose, the attitude. They have no idea how long it takes to perform with understanding the skill involved"

Martin Flanagan in The Age, 28 Dec 2007, interviewing Lewis Lapham

Jellyfish swarms

In November a swarm of baby mauve stinger jellyfish drifted into a salmon farm in the Irish Sea and killed all 100,000 fish. The jellyfish swarm covered 26 sq km and was ten metres deep. Fish farmers cannot prevent such swarms, or even the detached tentacles of larger jellyfish, from entering their cages, and the farmed fish die from stress.

The mauve stinger is a Mediterranean species but is now found as far north as the Shetland Islands. Warmer water has also lengthened the jellyfish breeding season. Carbon dioxide is making the ocean more acidic, harming the small creatures with acid-soluble shells that would have competed with the jellyfish. Overfishing is removing the vertebrates that ate jellyfish, while the jellyfish are eating the baby fish. In addition small plankton eating fish that would normally be the ones to compete with jellyfish are being fished out, often as a source of fishmeal for the use of fish farms.

All up we have set in motion a series of feed-back loops that are replacing an ocean full of fish with an ocean full of jellyfish.

New Scientist, 1 December 2007

Carbon sinks weakening

The earth is not able to go on processing the quantities of greenhouse gas we are putting into the atmosphere. Fifty years ago, for every tonne of carbon dioxide emitted, 600kg was sequestered by land and ocean sinks. In 2006 this had fallen to 550kg and the amount sequestered is continuing to fall.

Changes in the Southern Ocean account for about half of the decline. As intense westerly winds are pushed further south they ventilate the oceans and release more carbon dioxide.

To prevent dangerous heating global emissions need to be reduced by 60-80% by 2050. Prof Barry Brook, director of the Research Institute for Climate Change and Sustainability, University of Adelaide, has calculated that if Australia is to take a fair share of the burden we need to reduce our emissions by 95%.

Australasian Science, January/ February 2008

Exploiting oil sands

Western oil companies, along with the Chinese, intend to invest more than $(US)100 billion in developing Canadian deposits of oil sands. These deposits are a mix of bitumen, sand, clay and silt that lie beneath 140,000 sq km of Alberta, most of it forested. The reserve is estimated at 1.7 trillion barrels of crude oil.

Canada is currently the seventh biggest oil producer in the world, and its oil sands are predicted to push it up to fourth place by 2015. However exploiting the oil sands is very energy intensive, producing up to four times more carbon dioxide emissions than extracting ordinary petroleum. To soften the bitumen high pressure steam, heated by gas, has to be injected into the sands. This uses a lot of water as well as gas, and the water is polluted in the process.

A new technique being tried in Alberta is to inject air down a vertical well and then ignite it. Heat generated in the reservoir reduces the viscosity of the heavy oil, allowing it to drain into a separate well, where it rises to the surface.

The Canberra Times, 4 January 2008

Aspirations

Everywhere in the world, the poor see how the rich live, if not out their window, then on TV. People who live in shanties can compare the material quality of their own lives with that of people who fly over them in jets. It's very difficult to know that someone out there has a car and a computer, a comfortable office and a beach house, and not, at some level, want those things too, or a version of them that maps to their desires. It would be difficult to find people who would willingly and happily choose poverty when they know that others live easily and prosperously. ... There aren't a lot of teenagers clamouring for a lifestyle which—if shared equally—would enable us all to live within the Earth's capacity. No, what the kids want, from Capetown to Lagos to Novozibirsk and everywhere in between is to live like Americans, or at least Italians: they want stereos, they want refrigerators, they want cars, they want computers. They want better lives. One of the realities of our day is that we live in a young society and many of these young people know how the richest among us live, and they want, if not that, at least something better than what they've got. We can be sure that every one of the billions of kids now growing up has their own dreams.

We should also be responsible global citizens. It is our humanitarian duty to improve the lot of the poorest people of the world. It is also enlightened self interest because a world of increasing inequality will be a world of increasing tension.
Ian Lowe, Reaction Time, *2007 p11*

It's worse than wrong to think that we're going to talk them out of pursuing those dreams. In fact it's hypocritical to think that we should discourage them—especially those of us in America (the land where the pursuit of happiness is written into our founding documents) should say to the two-thirds of the world living in what we consider dire poverty, "Sorry, some white guys, mostly dead now, set up a system which means that we get laptops and day spas, but y'all should be happy with an emaciated goat and a half-dry well."

Alex Steffen
Worldchanging, 2006 (p. 18)

Tough targets wanted

Major US corporations were among 150 of the world's largest businesses that took the opportunity of the Bali conference on the Kyoto Protocol to call for tough targets to cut global greenhouse gas emissions.

They can see business opportunities in the shift to a low-carbon economy, but they want a comprehensive, legally binding, UN agreement that will provide certainty for business investment.

New Scientist, 8 December 2007

Promoting solar

The country that is home to some of the world's largest solar cell manufacturers and has over half the world's installed capacity of photovoltaic cells is Germany!

With their excellent technological skills, Germans have made substantial improvements in photovoltaic efficiency. This has happened because politicians saw it was in the national interest. In 2004 they borrowed a Japanese idea and introduced large-scale feed-in tariffs. All producers of solar-generated electricity from individual homes to energy farms can sell excess power to the grid, at a premium that is guaranteed until 2024.

The resulting increase in demand led to increased manufacturing. Within two years about 300,000 small businesses and individuals installed PVs on their roofs. Solar capacity in Germany has reached three gigawatts, the equivalent of three large power stations.

Twenty other countries, and the State of California, have followed this example. Experience indicates that the cost of PV cells falls by a fifth for every doubling of manufacturing capacity. It's just a case of getting started.

New Scientist, 8 December 2007

Gene talk

A gene that was identified in a family with an inherited problem in pronouncing words and in speaking fluently, works the same way in zebra finches.

Experiments with the finches have shown that the same gene is responsible for young male birds learning their song correctly by listening to older males. If the gene is faulty then the birds' recital is faulty, with fewer syllables and inaccurate sound. This parallels the speech defect in affected humans.

The gene is vital for the proper functioning of brain circuits necessary for vocal learning in both the finches and humans.

New Scientist, 8 December 2007

Nature and Society Forum

Contributions for the next edition of *Nature and Society* are invited now from all members. They should be sent to the editor, Jenny Wanless, 22B Jensen St, Hughes ACT 2605, ph 02 6281 3892, or to our office by 15 March 2008.

Contributions may be sent on paper or electronically. This journal was prepared using Microsoft Word and PageMaker 7.0.2.

Items in *Nature and Society* do not necessarily reflect the opinions of the majority of the Forum members, but are published in the hope of stimulating thought and discussion.

Jenny Wanless and Keith Thomas prepared this edition together with the named contributors; Jenny and Keith also contributed the unattributed items and provided the quotations.

Nature and Society Forum's major projects

ANSI: The National Sustainability Initiative is working towards the establishment of a working display site in Canberra that addresses all aspects of sustainable building and lifestyle. Contact Wendy Rainbird

Biosphere Reserve Nomination: supporting the nomination of the ACT as a UNESCO Biosphere Reserve, part of UNESCO's Man and the Biosphere program. Contact Ian Anderson

Social Change Project: interactive website to be launched in February, to provide authoritative information on social and environmental issues for public discussion. Also kits on the same lines for use in discussion groups. Contact Stephen Boyden

SEE-Change: community based discussion and action groups to encourage local involvement in sustainability activities. Contact Bob Douglas

Sustainability and Health project: a number of groups focussing on different aspects of this topic, including art and transport, youth film makers, local communities. Contact Valerie Brown

Climate Friendly Planning and Housing: extending knowledge of how to build or retrofit houses to use less water and fossil fuel energy while enhancing liveability. Contact Derek Wrigley

Nature and Society Forum membership form/tax invoice **(includes GST)**

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