# Nature&Society

**The Journal of the Nature and Society Forum** **August - September 2006**

## Editorial

After the Canadian elections earlier this year a number of international scientists took the opportunity to write to the new Government, to urge them to rethink the country's commitment to the Kyoto Protocol. There were several Australians among the signatories. Possibly the best known among these was Ian Plimer, the geologist who gained fame some years ago when he took a 'creation scientist' to court, leading to a long public battle.

In 2002 Plimer's book *A Short History of Planet Earth* won the Reed New Holland Science Book prize. As a professor of geology, Plimer sees his job as being to profess his discipline and to try to educate the public on how planet Earth works. This he does with verve and flair. His *Short History* provides a very readable account of the mechanisms that drive the planet, of plate tectonics and continental movements, ice ages and warm periods, of changes in sea and land levels.

> *Returning to a way of life which is balanced and which supports the earth is not going backwards; developing impressive, but ultimately destructive technology is not going forwards.*
>
> *Rachel Francis*
> *The Ecologist, September 2005*

Plimer's thesis is the one that has underpinned geological studies for a long time and that will continue to be true while the earth and the sun continue in their present relationship: the present is the key to the past. Geological processes will continue to grind on, the earth will warm and cool, species will become extinct and new ones evolve, and all geologists know it. But certainly not all geologists agree with Plimer that human actions cannot make any difference to the details of this story.

Geologists know, for instance, that several thousand million years ago bacteria evolved that emitted oxygen, thus changing the composition of the atmosphere and wiping out some of their bacterial brethren. This generation of oxygen by life modified the geology of earth by enabling extensive precipitation of iron oxides in the ocean, ones that now provide the iron rich rocks of the Hammersley Basin, amongst others. Since that time life, the atmosphere, the rocks and the oceans have continued to interact.

Of all people, geologists should be aware that humans have now become at least a minor geological force in their own right. Whereas beavers build small dams and slightly alter individual river flows, we stop whole networks of rivers from functioning properly. We stress the earth so much by loading it with the waters of massive dams that we can cause earthquakes. By mining coal or extracting oil we also cause small 'quakes. We blast away mountains, doing in one year what natural erosive forces would take thousands of years to do. We change the composition of the atmosphere, not only by burning stored carbon in fossil fuels, but by putting totally new chemicals, such as CFCs, into the air. It seems disingenuous to claim that human activities cannot affect the climate.

That is the point of conflict. Some geologists dispute any significant impact by humans on the climate. Others see only too clearly that

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humans are currently enhancing the greenhouse effect that makes the planet habitable, and they trace the increasing concentrations of carbon dioxide to our industrial exhalations.

Of course any geologist will shudder at simplified slogans such as one conservation group's appalling titled Extinction Denied campaign 'Make extinction extinct'. Don't these people know anything about the history of life on earth, and that 99.9% of all species that have ever lived are extinct? 'Stop climate change' is equally inane, probably equalling the 'chemical free' label on 'organic' food. All food is organic in a strictly chemical sense and everything except a total vacuum consists of chemicals. But one must admit that 'stop enhancing the greenhouse effect' or 'prevent human-induced climate change' don't have much zing; they don't work as slogans. Also, although the slogans are nonsense, scientifically, we usually do know what they are really supposed to mean.

So what do proponents of 'stop climate change' actually want, and is it so terrible? They want us to stop burning fossil fuels, and to find ways to live within the free allowance of sunlight the sun bestows on us. As, at last, the decline of the oil age is making headlines you would think that everyone would welcome efforts to find and implement non-polluting ways of generating the energy we need including, very importantly, energy conservation so we can do more with less. Measures to build buildings that keep the occupants warmer in winter and cooler in summer should be welcomed by almost everyone. Cutting down on oil use by having food grown locally, and with people able to work, shop and play locally, would be to most people's benefit. This is not looking back to a mythical golden age that actually never existed. It is looking forward, trying to bring about a better world. It is also a world in which, importantly, people will be better placed to live passably comfortable lives, despite the vagaries of climate on an earth, which, as Plimer and others tell us, will change in ways over which we have no control, maybe getting hotter, maybe colder. Greenhouse and Ice house will recur, as they have through geological ages.

To achieve this somewhat happier ending, the Nature and Society Forum agrees wholeheartedly with Ian Plimer that education of the public is vital. People need to know how the earth works, how geological forces have shaped it and will continue to do so, how life interacts with the atmosphere, soils and oceans, and also what happens when progress is simply equated with growth. That is why NSF considers education on these key matters to be a major activity for our organisation. Whereas Plimer sees the downfall of previous civilisations as being the result of natural climate change, volcanic eruptions and other natural events, we agree with the many other scientists who see human actions as at least compounding those problems, and of being a major cause in some cases. If people do not understand the global forces that have made and continue to mould the earth and its inhabitants, they have precious little hope of avoiding the downfall of our own civilisation.

> *Extinction opens new environments for colonisation and, because former terrestrial animals have become extinct, we humans now have a habitat. Sea levels have risen and fallen thousands of times by up to 400 m, land levels constantly rise and fall, and massive climate changes occur derived from supernovae, solar flaring, sunspots, meteorites, comets, uplift of mountain ranges, pulling apart of land masses, drifting continents, orbital changes, changes in the shape of the Earth, ice armadas, changes in ocean currents, and release of methane from sediments or volcanoes.*
>
> *Ian Plimer*

***Jenny Wanless***

## NSF Annual General Meeting 20 September 2006

Our AGM will be held on Wednesday 20 September. At this meeting we will be voting to select members of our Management Committee.

If you would like to nominate a member for one of the eight positions on our Committee, or if you would like to be nominated for a Committee position, please contact our office for a nomination form.

Nominations must be seconded by an NSF member with the nomination form carrying the signed consent of the nominee.

# Nature and Society

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## Where we are:

Our rooms are in the South West Wing of Weston Creek Primary School, Minns Place, Weston, ACT.

**By car:** from Civic, follow the signs to Weston from the Tuggeranong Parkway and continue to Weston by veering left from the traffic lights at the Cotter Road turnoff. This takes you along Streeton Drive for one kilometre, then turn left into Hilder Street (there is a small signpost pointing along Hilder Street). Drive around behind the school into Minns Place and then into the car park. Our rooms are down the slope to the left of the school building – about 40m from where you'll park your car. Follow the sign to 'Sustainability Groups'.

There is space for three or four cars for disabled access close to the entry. There are ramps over the kerb from this small parking space and entry to our building is without steps.

**By bus:** The 126 bus route from Central Canberra and walk 200m.

**By bicycle:** the office is adjacent to the western trunk cycle path between Civic and Tuggeranong.

If we wish our civilization to survive we must break with the habit of deference to great men for the reason that they may make great mistakes.

Karl Popper
*The open society and its enemies*

## Forthcoming NSF meetings

For the latest information visit our website www.natsoc.org.au and click on "What's On".

The August and September meetings will both be held at the Fellows Lane Cottage, Emeritus Faculty, Building 3T, ANU campus, beginning 7:30pm.

**16 August 2006 - Sustainable housing and communities for Canberrans**

Our focus this evening will be on the nuts and bolts for people who actually want to make the shift in the next few years, either retrofitting or building afresh, on their own or with others, young or old. The format will be brief presentations (each 10-15 minutes) from five panellists followed by questions from the floor. The forum will give an idea of the scope and potential (as well as the pitfalls) of shifting to a way of living more in line with the needs of people and the planet.

Our panellists are:

- Fiona McIlroy who has been involved in intentional communities – communities thrive or founder because of people more than because of design issues,
- Petar Johnson talking about embodied energy; he will also pass on his observations following his recent move to his new home at Googong,
- Craig Downsborough from Canberra Co-housing,
- Annie Mathers from ACTPLA to talk about One Planet Living – they are affiliated with WWF and are thinking of developing a community in Canberra,
- Derek Wrigley, author of *Making Your Home Sustainable*.

There will also be information on a low-input Permaculture approach to urban retrofitting along the lines proposed by Permaculture pioneer David Holmgren last year.

A gold coin donation would be appreciated.

**20 September 2006 - Annual General Meeting and a talk by Frank Fenner**

Frank will talk about his recently-published autobiography *Nature, Nurture and Chance*. In this book he reflects on his own life and also that of his father, Charles Fenner, and whether it has been nature, nurture or chance which influenced their life courses.

# What's been happening

## Life Centres - now SEE-Change Centres.

The all-day roundtable on 17 June brought together a diverse group of 34 Canberrans who we believed could help to develop the Life Centres idea proposed by Stephen Boyden and elaborated upon by Emeritus Professor, Bob Douglas, another NSF member.

**Renaming Life Centres** - In forming the concept of the centres, Stephen Boyden had suggested that they be called Life Centres to encapsulate the way they were about celebrating human life in the biosphere as well as in society, about individuals being able to enjoy the healthiest and happiest possible lives in the healthiest possible environment. The roundtable participants raised with us the prior adoption of the name life centres by evangelical Christian groups already established. Following the roundtable, the steering group NSF established to drive the establishement of the centres found the appropriation of the name created a persistent obstacle to promoting them to newcomers. After brainstorming and debate the group settled on SEE-Change Centres, with SEE standing for Society, the Environment and the Economy, the components of the well-known 'triple bottom line'.

*The fundamental argument for redistribution of income is that an extra pound makes more difference to a poor person than to a rich person. Therefore the average happiness goes up when we take it from the rich and give it to the poor. That is something we can do.*

*Professor Richard Layard interviewed in March 2005 at the London School of Economics (ABC Radio National)*

**What happened at the roundtable?** A summary of the roundtable outcomes is available on the NSF website as is a full transcript of the day's discussion and debate and printed copies are available on request from the NSF office.

**Following the roundtable** – The enthusiasm apparent at the roundtable flowed over into a range of commitments from individuals from both within and outside Nature and Society Forum to bring the concept to fruition. The earlier small steering group was expanded with willing new members broadening the base of expertise and contacts to the extent that our original bold hope that we might begin establishing six pilot centres in Canberra this year has become a reality.

Although many welcome and valuable contributions to the project have been received, we must acknowledge the contributions from three social work students from the Australian Catholic University who will be working on the SEE-Change project as a formal placement for their course.

**What's next?** – The publication of Bob Douglas' book *SEE-Change Centres, Grey Power and Hope* in mid-August, with the public launch of the book and the SEE-Change movement by politicians representing the three parties in the ACT House of Assembly on 15 August.

**The role of SEE-Change Centres** – To provide easily accessible information about the nature and origins of life on Earth, the state of the environment, the health and well-being of human populations around the world and the current state of the science of sustainability and of human health and well-being.

To provide opportunities for informed discussion and debate about the future of Australian and world society and the various institutions and policies which shape environmental and human health and well-being.

To work with a coordinating group for dissemination of valid and well-authenticated scientific, health and social information that can aid and document the shift towards a bio-sensitive and healthy local and global society.

To explore the opportunities for – and barriers to – change in sustainable directions that face Canberrans today.

To provide pleasing settings for creative learning, personal and collective involvement, physical activity and communication, using where appropriate, music, art, displays, performances, exhibitions, cross-generational dialogue and community social functions.

To assist Canberrans to move towards a lifestyle that, while it may be less consumerist, will be more healthy, more enjoyable and more resilient to the shocks which inevitably lie ahead.

SEE-Change centres would be accessible and visible to people in their local neighbourhoods. They will be staffed by volunteers and will facilitate cross-generational exploration of a wide range of issues that impact on daily Australian life. And they will provide enjoyable opportunities for social interchange and enrich people's lives.

## Report of June NSF Meeting

# Deserts

The year 2006 is the International Year of Deserts and Desertification. As our June speaker, Deborah Rose, pointed out these are not the same thing. The United Nations also recognises this but thought the two could be considered in the same year. Desertification is degradation of dryland, brought about by human-induced factors, such as over use, that causes the loss of biological productivity. Deserts are places to celebrate and to live in.

Deborah Rose has come to know the Australian deserts through many years working with Aborigines to help them establish land claims. She understands and appreciates their connection to country, and gave us some idea of what country means to them. She also pointed out that the process of presenting and arguing for land claims has made a younger generation of people aware of the power they can gain by rekindling and reinforcing traditional knowledge.

> *It is important to recognise, however, that drylands are also home to some of the most magnificent ecosystems of this world: the deserts. These unique natural habitats with their incredibly diverse fauna have been home to some of the world's oldest civilisations. They stand like open-air museums, bearing witness to bygone eras. The Year will therefore also celebrate the fragile beauty and unique heritage of the world's deserts, which deserve protection.*
>
> *Quote from IYDD flier*

To Europeans deserts are strange places, but in Australia there has been a long history of deserts as home. The desert people know their deserts and have established a sacred and subsistence ecology based on knowledge of water sources in their area. Australia has the largest and most variable inland flowing river system in the world. The variability helps to explain the paradox that there are two ways to die in the desert: by thirst or by drowning. The floods wake up the organic life of the country, for a brief, sporadic exuberance.

The colour red suffuses Australian deserts. Red is the colour of blood and connections are seen between red, women, blood and Eros. The red ochre of ceremonies and painting is considered to be blood left in the ground by earlier beings.

The pulses of life in the desert teach us about periodicity, the flow and the aridity. Humans are fragile and water-dependent. In exceptional years, when floods permitted blooming in the driest desert lands, not only did the plants bloom and the animals flourish in those areas, but the care-takers of the land were able to revisit their totemic lands. Children took their totems from the place of their birth, and often there would be many years between visits for those born in exceptionally wet years. For all the desert peoples the dance of water is the dance of life.

The lesson from studying desert cultures is to learn to live with the pulses of life and the gaps in between. It is to adjust demand to the supply of water and to live on what nature provides.

***Jenny Wanless***

## Report of July NSF Meeting

# Achieving a Sustainable Economy: new economic alternatives to market globalism

NSF held this successful seminar on economics and sustainability as part of an Australian speaking tour by Deidre Kent of New Zealand and Professor Bob Blain of Southern Illinois University, USA. They were invited by Economic Reform Australia, a non-party-political organisation dedicated to the long-term goal of achieving a socially, environmentally and financially sustainable economic system.

Around 70 people comprised the packed and lively Saturday afternoon audience. The question and discussion period underscored the basic social and environmental purposes of the economic ideas and practical proposals advanced by the speakers.

**Deirdre Kent** is author of *Healthy Money, Healthy Planet: developing sustainability through new money systems* (2006). As a social and environmental activist, she seeks to return control of the economic and financial system to the people, specifically through local, complementary currencies – a social credit view updated for the contemporary world. The ever-expanding money supply, mostly based on interest-bearing loans or debts, drives unsustainable economic growth and is therefore a major structural impediment to a socially and ecologically sustainable economy.

In addition, the debt financing system and consequential expansion of the money supply, create growing inequity as wealth and power shift towards the rich. Globally, they render the $US as the principal international currency, an inefficient and unstable situation. A calamity like peak oil could cause currency collapse. She advocates local and community currencies (Yin) to balance and complement national currencies (Yang). The former promote cooperation, social capital and efficiency, the latter serve competition, greed and fear of scarcity.

Deirdre cited many examples of local currencies: local exchange trading systems (LETS), vouchers, notes, barter, time banking (hours of work as currency) and interest-free banking in various forms. Many such schemes have petered out but electronic means are easing the administrative burden. She said 15% of international trade was already in "Yin" currencies as traders and corporations made big cost savings. Contemporary successes include Itheca, USA and Roland in Germany. The Club of Rome will shortly publish a pertinent report *Money and Sustainability* (it no longer assumes the monetary system is neutral).

*We're continuing to see debt levels rise between 10 and 15 per cent per year at a time when household incomes are probably growing at around 6 or 7 per cent. Australians are much more vulnerable to higher interest rates.*

*Canberra Times 29 July 2006*

**Professor Bob Blain** addressed the more theoretical and global issues about money. He indicated a strong movement in the USA that questions the role of money and seeks alternative institutions to restore democracy and sustainable resource use (rather than plutocracy and natural resource destruction). He points out that value does not usually equal price in exchange. Rather, value is about lifetime utility, so that the difference between value and price represents profits and social or environmental losses.

In his book *Beyond Capitalism: an experiment in the evolution of money* Bob Blain argues that money is a poor and misleading measure of value. As a metric standard it lacks measurable objectivity. Only *time* is objective and readily quantifiable. Thus, he advocates a theory of value based on hours of work and 'an hour of work' as the world's best currency unit. He has designed a scheme for comparing currency exchange rates in terms of productivity per hour of work (GDP per hour of work) which would eliminate currency speculators and manipulators.

'An hour of money for an hour of work' would be more democratic, focus on needs, limit production and trade, realise more leisure time and provide incentives for more localised economic activity. The key concepts are not scarcity and competition but cooperation, commensuration and reciprocity. 'Hour money' could be issued by democratically elected governments in all spheres: central, regional and/or local.

He provided three interesting websites: www.hourmoney.org (including the game 'Autonomy', an antidote to Monopoly), www.monetary.org (the American Monetary Institute) and www.radford.edu/-gmartin/ (the Provisional World Parliament).

**Dr Geoff Davies** was concerned with the operation of the economic system rather than the monetary component. He described a sequence of scenarios – economic reform, institutional transition to resource efficiency and a perennial state of sustainability. The reform agenda is quite heroic: stabilise and re-direct financial markets, transaction (Tobin) and environmental taxes, full cost life cycle pricing, structural subsidies, healthy money, free media and democratic government.

Transition to efficiency and restoration of productive systems seemed more feasible with plentiful examples of recycling, factor ten efficiency and ethical investment. The third stage 'perennial imperatives' aimed to design with nature through compatibility with and in imitation of ecological processes, recycling of all materials and no persistent toxins.

**Question time** was stimulating and productive. The speakers advocated participation in local currency schemes, shareholder actions and debate about true value. Natural resource systems in particular need to be valued on their own terms.

One questioner asked about Michael Rowbotham's book *Grip of Death* and the revival in New Zealand from the 1970s of a Democrats for Social Credit political party. The NZ Reserve Bank has been influenced briefly by interest-free issues and curbs on debt creation, but the influence of conventional economics and the USA's historical and exponential debt creation has been overwhelming. Thus is democratic

sovereignty forgone. Control over the money supply belongs to all the people and is not the power domain of banks and corporations. Similarly, where is political support for greenhouse taxes?

In response to the question how can economic growth continue on a finite planet, Bob Blain said succinctly 'enhance quality of life.' He argued for more demand-side consideration of employment by redistributing work and jobs and hours worked according to worker demand. Further, hours-based value of work is more democratic and values all work (currently paid, unpaid and volunteered).

The final question related to guidelines for investment in social and physical infrastructure and environmental restoration. Neither in New Zealand nor in Australia at the present time are governments, Reserve Banks or public sector superannuation funds contemplating channeling money directly or explicitly into these areas or even providing choices to the sovereign community stakeholders. The speakers agreed that here was scope for demands from the people for better ways of safeguarding the future.

***Brett Odgers***

*The so-called global economy was not a permanent institution, as some seemed to believe, but a set of transient circumstances peculiar to a certain time: the Indian summer of the fossil fuel era.*

*James Howard Kunstler*
*The Long Emergency 2005*

## Film review

# An Inconvenient Truth

**USA, 2006, 94 Minutes**

To be released in Australia on 14 September.

This is the story of climate change as told by Al Gore, the man once known as 'the next president'. This is how he wryly introduced himself to an audience near the start of the film showing a sense of humour not always evident in his eight years as US vice-president.

Since 'losing' the US Presidential race six years ago, Gore has re-adopted the issue that fascinated him at college 30 years ago and about which he wrote a book 'The Earth in Balance' (1992). He now gives free lectures across the country about climate change - a scourge he believes will destroy life on the planet unless we can turn the situation around in ten years. To back up his lecture he has a state-of-the-art slide show, interspersed with moving graphs and pictures of cracking ice-floes and disintegrating glaciers, and there's even animation.

This is a magnificent lecture. Gore imparts the information clearly, intelligently and with humour, despite the grim nature of the subject. For better or worse, however, it is woven around Al Gore's personal story and why he is so motivated to act for this particular cause. At various points in the film you long for them to get on with it and just give us the information about climate change. The film's biggest flaw, indeed, is its tendency to linger too long on Al's face as he bangs away at his lap-top in some lonely hotel room. Even for Al Gore's fans, like this reviewer, you are left with the cynical feeling that this is the start of his run-up to the next Presidential campaign.

But for all that, this is a film worth seeing. You can even call it inspiring. It is worth dragging your apathetic relatives along and paying for them to see it. It is worth writing to your local MP and demanding he/she see it. It is worth helping pay for Al Gore to come to Australia and deliver the lecture to the Federal Cabinet, and the Shadow Cabinet for that matter. You can't get a better messenger about the catastrophe that confronts us than Al Gore … well, maybe Mickail Gorbachev but he doesn't have a slide show, does he?

***Jenny Goldie***

The San Francisco Chronicle published an article headlined 'Scientists Split on Heat Wave Cause,' which said some climate experts attributed the heat wave 'at least partly' to global climate change. 'Others, however, disagree,' the article continued, 'and say it's still too early to blame the current weather on the planet's changing climate.'

This made me wonder: when will it be too late? I get it that you can't blame climate change for any one weather event. But I can also see that there's a pattern emerging — and it sure looks a lot like what mainstream scientists have been predicting for several years. They've been warning of more frequent and severe heat waves and warmer nighttime temperatures that rob you of any relief. You don't really need a climatologist to know which way the wind is blowing.

Katherine Ellison
New York Times, 29 July 2006
(Written during a Californian heatwave)

# Are Whales – or Humans – Sustainable?

**This is an edited extract from a talk by NSF member Graham Chittleborough to the Trinity Seniors Group in Perth, May 2006.**

Let's review what has happened over the last sixteen years or so. Despite much rhetoric, by burning evermore fossil fuel we have ensured that our land sinks for excess greenhouse gases have not recovered, and our next line of defence, coastal tropical reef sinks, are increasingly collapsing. The warning lights for the latter hazard have been blinking ever more widely in recent years. I'll cite just one example which epitomises the problem – as well as being right at our backdoor!

Off the north-west coast of Australia, the once delightful corals capping Scott Reef, 400km north of Broome (on the outer edge of a wide shelf, far away from land pollution), are now completely dead. The massive coral bleaching that hit coral reefs all over the tropics in 1998, badly affected Scott Reef, killing eighty per cent of its corals down to thirty metres. Then in March 2004, Cyclone Fay slowly moved over Scott Reef. Wind gusts at up to 300km per hour completed the destruction by physically ripping out huge limestone outcrops and rolling them across the few remaining living corals.

*With their water bill in October last year, Perth residents received a pamphlet with a bar chart showing the average annual inflows to Perth's reservoirs over various periods. For 1911-74 the average annual inflow was 338 gigalitres. For 1975-96 it was 177GL. For 1997-2004 it was 120GL.*

*Graham Chitleborough*

With greenhouse emissions accelerating, the land sinks for them decimated and coral reef sinks increasingly devastated, global warming is lurching forward, accelerating the collapse of other marine sinks. These marine sinks used to be ten times greater than the sinks provided by land vegetation.

So global warming is spreading towards polar regions, and gaining momentum. In fact, the increasing pace of events has surprised many climate modellers. By September 2005 we heard that the very extensive and deep permafrost peat beds across much of Siberia are thawing rapidly, for the first time in 11,000 years. The peat's organic material is breaking down anaerobically, releasing methane. As methane is thirty times more efficient than carbon dioxide in trapping heat this confirmed climatologists' long held views about the consequences of thawing the permafrost.

Soon reports of a thinning (thawing) of Arctic ice increased. In 2005 it was reported that the Greenland ice cap is in full retreat and approaching irreversible meltdown, far more quickly than scientists thought possible. By the end of 2005, oceanographers measuring currents across the North Atlantic reported that the Gulf Stream, which keeps the UK and Scandinavia slightly warmed, had weakened considerably.

Not only does the Arctic thaw shut down yet another marine sink for greenhouse gases, but it is also beginning to fulfil warnings that a thawing of the Greenland ice cap will eventually raise global sea levels by at least six metres.

Early in 2005 The Australian Conservation Foundation warned that the Southern Ocean sea ice is retreating and the formation of the Antarctic bottom water is already collapsing. Some of the top consumers in Antarctic surface waters are already dying of starvation!

The lessening of winter sea ice formation decreases upwellings of nutrient enrichment (dissolved nitrates and phosphates) needed for the summer's algal blooms when the sun returns to these seas. This in turn reduces the numbers of krill and other small marine life so essential to the productivity of the marine ecosystem. Adelie penguin colonies that have been monitored for years show the extent of the decline. Rookeries that contained 15,000 pairs of breeding adults have declined to 9,000 pairs. Smaller rookeries have been abandoned.

What about the other krill consumers, including the humpback whales, which are much harder to monitor? Until the late 1990s these seemed to be recovering nicely, but if the krill are declining then the whales are in trouble. Even back in the 1950s I suspected that female humpbacks might run into a starvation crisis at critical phases of their breeding cycle, such as their twelve months of pregnancy and eleven months of lactation.

So we now have global warming that threatens both the food supply for humpback whales, and for humans. The latter because warming is pushing the winter low pressure weather systems further south, so they do not provide

the rain we need across the southern portion of Australia.

The runaway chain reaction that has been initiated has wider implications for humankind, through rapidly rising sea levels. It has been calculated that if the twenty one million cubic kilometres of water locked away in the Antarctic ice cap should melt, the world's oceans would rise by at least seventy metres. That would not happen overnight – some think it is donkey's years away. But the first metre rise in sea level may be only a single step away. What would that mean for us?

That very question so perturbed the US Pentagon that a few years ago they asked their scientists to advise when the first three foot rise could occur, and what that would mean globally. When the answer came back in early 2004, the Pentagon was so horrified that they buried the report. What did it say? I don't know. I could paint a scenario, but you wouldn't believe it.

*I keep harking back to the first CSIRO conference on Greenhouse which I attended about 1980. On each side of the dais was a large banner. One said 'If we do something and it doesn't matter – it doesn't matter'. The other said 'If we do nothing, and it matters – THEN it matters'.*

*Graham Chittleborough*

### Personal carbon permit plan proposed by UK Environment Secretary

The logical conclusion of a focus on 'one planet living' is that we all need to curb our own carbon emissions, according to UK Environment Secretary David Miliband in July. He outlined a plan for carbon trading to be extended to individuals, with greener citizens receiving financial rewards while polluters personally pay for their emissions.

Based on a national emissions target, permits/ quotas would be issued on a per capita basis for food, household energy and travel emissions. Those with a lower carbon lifestyle would be able to sell excess permits to those choosing higher impacts, such as driving 4WDs.

'Imagine a country where carbon becomes a new currency,' said Miliband. 'We carry bank cards that store both pounds and carbon points. When we buy electricity, gas and fuel, we use our carbon points, as well as pounds. There may be potential to make a system work, and in a way that is arguably more equitable, more empowering and more effective than the traditional tools of information, tax and regulation.'

## Brief review

# Parenting for a peaceful world

**By Robin Grille. Longueville Media, Australia 2005**.

ISBN 1 921004 14 2 448p $35:90

As a parent, psychotherapist and client of psychotherapists, Robin Grille shows how emotional development progresses through childhood. Quoting detailed historical evidence he describes how parenting methods and styles have evolved over millennia towards the situation in most contemporary societies where children are valued as personalities and for themselves rather than their being a form of property.

The trend towards more parents understanding emotional development has left fewer people scarred by smouldering resentment, damaged by violence and lack of tolerance during childhood. Parental feelings and roles are explored with increasing evidence revealing that parenting is hard even in nuclear families. Famiies which have access to 'aloparents' and are supported by parent-nurturing communities are essential to the development of healthy, balanced children. Prefacing his work with 'the key to world peace and sustainability lies in the way we collectively relate to our children', Grille's concluding chapters suggest that societies benefit comprehensively from making investments in parents staying close to their children during their early years and from programs that provide social services to support and mentor parents.

Although it brings together the disciplines of psycho-history, neuroscience, child psychology and social psychology the book is readable and thought-provoking. It's for child health and educational professionals, policy-makers and any who seek potential solutions for the dilemmas of domination and warlike behaviour that are perpetuated in humans.

***Rosemary Blemings***

After reading this book, Rosemary has donated it to our collection at NSF. Please contact the office if you would like to borrow it.

## Book review

# Planet of Slums

**By Mike Davis. Verso, London and New York, 2006. 228pp. $35.00**

If ever there was a manifestation of overpopulation, it is the slum. Today, one billion people live in the world's slums, surrounded by excrement and pollution, often on precarious hillsides or floodplains. They squat in structures made of crude brick, recycled plastic or scrap wood, often without electricity, clean water or even rudimentary sanitation. One slum had only ten working pit latrines available for 40 000 people.

The scale of Third World urbanisation is now so rapid that some cities like Dhaka are 40 times bigger than they were in 1950. Yet since 1970, slum growth has outpaced urbanisation *per se*. Sao Paulo's *favelas,* for instance, housed a mere eightieth of the city's population back in 1973 but, within 20 years, a fifth of the city's residents lived there. And the situation is getting worse. Every year, the global slum population grows by another 25 million.

> *I would argue that Malthus was correct, but that cheap oil has skewed the equation over the past hundred years while the human race has enjoyed an unprecedented orgy of non-renewable condensed solar energy accumulated over aeons of prehistory.*
>
> *James Howard Kunstler*
> *The Long Emergency, 2005*

This is a powerful book by Mike Davis, described by one reviewer as a 'brilliant maverick scholar'. Indeed, every page has up to six or seven footnote references, an indication of his extraordinary breadth of researching about slums from Kinshasa to Lagos, from Karachi to Lima, from Kolkata to Luanda.

Slums are also characterised by overcrowding. Davis provides shocking statistics of human congestion. In Kolkata's *bustees,* for example, an average 13.4 people are crammed into each occupied room. These 10 by 15-foot rooms stacked on top of one another house 18 000 people *per acre*. And in Manshiyet Nasr in Egypt, more than a half a million share 350 acres.

While the poor live in 'slums of anthill-like density', the wealthy enjoy their gardens and open space. Even when land is set aside for low-income housing, the middle classes often subvert it. Governments are constantly seeking to relocate the poor, yet they cling to neighbourhoods close to services and jobs. Squatters and renters are routinely evicted and, when relocated away from city centres, may lose up to half their income in transport getting back daily to where the jobs are.

In an aptly named chapter *A surplus humanity?,* Davis describes slums as 'living museums of human exploitation'. The most shockingly exploited are children who work rather than go to school. A mere seven per cent of slum-children aged between 5 and 16 in Dhaka, for instance, attend school. In Varanasi (Benares), famous for its temples and holy men, 200 000 bonded child labourers under 14 weave carpets and embroider saris. Most of the children have been 'kidnapped or lured away or pledged by their parents for paltry sums of money'. These children may work up to 20 hours a day without a break and under conditions of physical and verbal abuse.

Slums are often swelled by the ranks of people displaced by civil war, notably in Angola and Colombia. Most displaced people are excluded from formal life and employment. Nearly two thirds of a million slum dwellers of Bogota, for example, have no employment and half are under 29. Such young people are, unsurprisingly, 'ideal recruits for street gangs and paramilitaries'. Globally, one billion workers, or a third of the world's labour force, are unemployed or underemployed. Davis notes bleakly that 'there is no official scenario for the reincorporation of this vast surplus of labour into the mainstream of the world economy'.

Davis is scathing in his criticism of structural adjustment programs (SAPs) imposed by the International Monetary Fund (IMF) on its client nations. As it increased its lending step by step, it ratcheted up the structural adjustments – a 'poisoned chalice' of devaluation, privatisation, removal of import controls and food subsidies, enforced cost recovery in health and education, and ruthless downsizing of the public sector. And yet, as the United Nations Settlement Program (UN-HABITAT) pointed out in its groundbreaking 2003 report *Challenge of the Slums,* the biggest cause of poverty and inequality during the 1980s and 1990s was 'the retreat of the state'.

This book pulls no punches. It is exhausting to read but only because of the subject matter. It is essential reading for anyone interested in development issues. *Highly recommended.*

***Jenny Goldie***

## Cheap and Effective

Tony Taylor, of the Australian Nuclear Science and Technology Organisation (ANSTO), has invented a nano-particulate membrane bioreactor (NMB) that “eats poo and breathes air”. It is versatile and can be built in various sizes from ones for use in individual houses, right up to municipal sewerage treatment plants. ANSTO is patenting the membrane, which will cost the buyer about one dollar per square metre, compared with up to $500/sq m for the membranes currently used.

The membrane is a simple arrangement of gills that uses bacteria to operate as a lung and stomach. The membrane is very porous and allows the biomass, growing in air on one side of it, to feed on the polluted water on the other side. Other sewerage systems need electricity to aerate the water, but in the NMB the aeration is passive and free. This reduces the cost of secondary treatment and even some tertiary treatment from a dollar per kilolitre of water to twenty cents.

The sludge collected could be used in aquaculture systems to feed detritus eaters such as prawns and yabbies. Taylor thinks that sewerage treatment plants with aquaculture farms downstream could be enterprises earning millions of dollars rather than costing millions of dollars to run.

*Australasian Science,* July 2006

*Today’s researchers are embracing interdisciplinarity: we think bigger by working out how all known objects – from atoms to galaxies, from cells to brains, from people to society - are interrelated. The closer we look, the more everything seems related to everything else.*

*Eric Chaisson*

**Polystyrene foam**

Oakland, California adopted an Ordinance to prohibit the use of polystyrene foam food service ware and require the use of biodegradable food service ware on 27 June 2006.

## Texas tycoons overtake Californian greens in US wind power race

Texas has for the first time overtaken historic leader California to become the US state with the highest installed wind capacity, according to the American Wind Energy Association’s Second Quarter Market Report.

US wind farmers brought a total capacity of 822 MW online in the first half of 2006, taking cumulative wind power capacity to 9971 MW. After installing almost half of the year’s total capacity, Texas now accounts for 2370 MW compared with California’s 2323 MW.

California led the US in installed wind capacity for nearly 25 years, ever since the first wind farms were built there in late 1981, and was at one time host to over 80% of global wind capacity.

With the wind industry on track to install over 3000 MW in the US for the full year, compared to an estimated 400 MW of new coal fired power, wind’s growth will be second only to natural gas – which is estimated to be 10 000 MW this year.

**Another response to an NSF interest group e-mail**

Following an article circulated to our climate change interest group members in July about ‘food miles’, one member wrote ‘The story reminds me of the occasion about three years ago when two road trains were held up on either side of a flood across the Nullarbor plain - one carrying a load of carrots from Perth to Sydney, the other ditto from Sydney to Perth!’

**Andrew McNamara MP (Hervey Bay, Queensland) on peak oil**

Some of the material I’ve read suggests that the world’s total energy production’s gone up by two per cent per year for each year out of the last hundred years and, interestingly, so has the world’s population. It’s also risen by two per cent a year, and the wealth that we had in energy has allowed us to produce the food and warmth to grow the population correspondingly. If we can’t continue to produce the volumes of food that we do, and if that begins to decline, then there’s a necessary population decline. So, at the far end of the scale in terms of the risk, there is the risk that if we don’t properly manage this issue, that over a fifty year period the world’s population begins to decline by two per cent a year, and that could be a very unpleasant process.

(Interviewed 24 August 2005)

## Nuclear power and CO2

A few weeks ago I had a call from an NSF member who asked for information on the CO2 emissions from the nuclear power cycle. His point was that advocates of nuclear power ignore the CO2 emissions from uranium mining and processing, from the construction and decommissioning of the power station and from the reprocessing and storage of the nuclear waste. These emissions are fossil-fuel-based. I contacted Mark Diesendorf who provided me with a paper he had written on this topic and reference to another paper. We circulated this information by e-mail to the NSF energy interest group.

One member of the group came back to me with the following comment.

*Keith,*

*The question of 'how green is nuclear power' can not be considered in CO2 equivalence terms. The issue is one of genetic risk to more longer lived complex radiation-vulnerable organisms without mass reproduction/selection capacities.*

*The long term health and genetic risks from radiation leakages, accidents and wastes as well as safe decommissioning externality costs are all being ignored but fundamentally more important than CO2 as human future issues. More disturbing is that some think they can replace our hubris about fossil energy use with the greater hubris that we can gamble with and manage radiation risks. The issue is learning from what greenhouse is telling us, not lurching from our past foolishness to a future, bigger one. Global warming is a physical effect which we can still substantially mitigate and adapt to if we wish to; radiation pollution is biocidal, irreversible and effectively permanent. Cheers but no cheer*.

> *The outstanding scientific discovery of the twentieth century is not television, or radio, but rather the complexity of the land organism. Only those who know the most about it can appreciate how little we know about it.*
>
> *Aldo Leopold*
> *in Round River, 1933*

I passed this back to the NSF energy interest group and to Mark Diesendorf who also responded:

*CO2 emissions are part of the environmental impacts of the nuclear fuel chain, as are the emissions of low-level ionising radiation. However, I have to point out that coal-fired power stations emit more radiation than normally operating nuclear power stations. It is the risks of proliferation of nuclear weapons, terrorism, major accidents and high-level wastes that lift nuclear power into a high danger category all of its own.*

The two main messages that came out in this correspondence are that

- the question of relative CO2 emissions is not simple and must be put clearly before it can be answered clearly
- the questions of the many risks of nuclear power beyond its CO2 emissions is also not simple, but the answer here is clear.

***Keith Thomas***

### Bicycles

A third of humanity doesn't want to ride bikes anymore; that has profound geopolitical implications. — Anne Korin, the co-director of the Institute for the Analysis of Global Security (1 May 2005).

I choose to live within biking distance of my work. I see this as a crucial eco-lifestyle choice that has its own rewards, whether or not you're car-free. I also live close to my favourite food store and to several friends. The most efficient kind of transportation is already being where you want to go. — Kipchoge Spencer, designer of the new bicycle shape: the Sports Utility Bike www.xtracycle.com

### NSF library notes

NSF has received donated copies of the books by Bob Blain and Deirdre Kent (see pages 5-7 this issue). We would be pleased if some member would like to review these books, which are available from the office. We would like the reviews for the October journal.

Geoff Davies' *Economia* is already in our library and is a very good read, if you are at all concerned about the way our economic and financial systems seem to exacerbate so many of our environmental and social problems. While we are about it remember that our office houses a number of interesting and important books, and books don't do anyone any good if they sit unread on the shelf.

## Unequal Health

"*An imbalance between rich and poor is the oldest and most fatal ailment of all republics" Plutarch*

No matter how wealthy our society becomes, the bigger the gap between rich and poor, the worse it is for people's health. That is the opinion of Michael Marmot, the Professor of Epidemiology and Public Health at University College, London.

The gap between the incomes of rich and poor people is widening in many countries, notably the USA and the UK. This has serious consequences for health, education and life opportunities.

In the Whitehall study run by Marmot in the 1980s, it was found that men who had low measures of control in their work had more heart disease and worse health in general. With women, the correlation was associated with the amount of control they had at home, but in both sexes disease increased with less control.

There is a social gradient in health; it is not just that the poor have poor health, but that the lower someone's social position is, the worse their health is. The degree of autonomy people have in their work and in their general life is an important indicator of their health and their ability to be full participants in society.

Research on other primates has shown that low status activates the body's two main physiological stress pathways, increasing production of both cortisol and adrenalin, with an increased risk of metabolic disturbances and disease. What is more, these effects in adults also affect their children, passing on the probability that they, too, will be destined not to achieve their potential.

*New Scientist,* 27 May 2006

> *Facts do not cease to exist because they are ignored.*
>
> *Aldous Huxley*
>
> *It is the nature of the human species to reject what is true but unpleasant and to embrace what is obviously false but comforting.*
>
> *H L Mencken*

## Aquifers

At a time when aquifers, the great underground water storages provided by nature, are being depleted in so many countries, it is timely to be reminded of their value. Writing in *Australasian Science*, June 2006, Derek Eamus of the University of Technology, Sydney, described the varied roles aquifers play. He was spurred on by the news that two new aquifers have been discovered near Sydney, and the claim that these can be used to drought-proof that city.

Eamus pointed out that Australians have been using aquifers at an increasing rate. Between 1983-4 and 1996-7 water extracted from aquifers had trebled. For NSW the annual extraction had risen from 318 gigalitres to 1008 GL, for Victoria from 206 GL to 622 GL and for WA from 378 GL to 1138 GL. Although water is a renewable resource there is no way such increases can continue for very long: new aquifers will not alter this.

Contrary to popular opinion, ground water is not sitting there inert, awaiting human use. Ground water stores that are in hydrological balance actually discharge water at the same rate it is being recharged. Many trees, such as River Red Gum forests and Western Australian Banksia woodlands, have roots that tap into ground water. Other riparian forests along perennial rivers and on floodplains rely on ground water in dry times. Ground waters also discharge into streams, lakes, seeps and springs that maintain swamps, marshes, wetlands and mound springs.

We have assumed that aquifers have a 'safe yield' and can be used sustainably if we restrict our extraction from them to the amount of recharge. That leaves nothing for all these other users, yet we rely on these others for ecosystem services, such as the prevention of soil erosion, capture of nutrients, effective natural filtration systems, maintenance of bird life, beauty and tourist attractions. All of these suffer if we take out the 'safe yield'.

There is another factor that is hidden and almost unknown. Aquifers host mysterious stygofauna, consisting of many varieties of bacteria, crustaceans and other small creatures. There is some evidence that the bacteria are of great benefit to us, being able to out compete and nullify the pathogenic bacteria discharged into the environment in our grey water. There is intense research into purifying poor quality water that is deliberately pumped into aquifers for this purpose.

We need to understand all these real, tangible benefits provided by aquifers and their ecosystems, rather than think of them as simply new water storages for our exploitation.

# Farrago

### Mountaintop Removal

For over a century the people of the Appalachian Mountains of eastern Kentucky have lived by mining. Now the mining companies have come up with the most efficient method yet for winning coal: remove the top of the mountains. A dozen giant D-9 bulldozers can wreck a mountain in a year. The miners dynamite the mountain, then push the topsoil, vegetation and bedrock over the side into the valleys. This buries streams and every time it rains there is a flood. The water in wells and sludge ponds is black. Houses flood and crack.

Though the people of the area love their mountains, they do not protest, because they depend on mining for their livelihood. But the efficiency of the operation means that nearly two thirds of the mining jobs have been lost in the last 25 years, and the population of the area remains poor.

The mining industry intends to reclaim the land, with factories and golf courses on the flattened land. Unfortunately the forests won't come back. They were a very diverse and ancient ecosystem, that once before reseeded the continent when the surrounding lower areas had been stripped bare by glaciers in the ice age. Now the forests, along with the topsoil and the seeds it contains are going, and will not come back in anything like their previous form.

*The New York Times,* 5 Feb 2006

*The act of getting stuff makes us feel good. It's not having it, it's getting it. that's why we never feel we have enough. We never get enough, because it is the act of getting that feels good. That's biology.*

*Jay Hanson*
*Interview 21 June 2003*

### Wheat Futures

Sometimes it is said that higher concentrations of CO2 will improve crops yields. A study of conditions expected in Australia's wheat growing areas discounts this idea.

Peter Grace of Queensland University of Technology considered warmer temperatures, changes in rainfall and extra CO2 and concluded that overall wheat yields would fall. Yields in the Darling Downs would be lower by about five per cent, but in the southern Mallee the loss is likely to be 24 per cent.

These figures did not include probable damage from pests and diseases. The new climatic conditions are likely to produce increases in both of these.

*Australasian Science,* July 2006

### What is Wealth?

How do you measure wealth? The residents of an EcoHood development in Prescott, Arizona, think they are better off than their conventionally wealthier neighbours up the hill. In the EcoHood they sit on an eight foot depth of topsoil, with good water in old wells. They are sheltered from the winds. Their smaller houses are amenable to retrofitting. They grow much of their own fresh food. Their streets are safe for children, and they have a bike track alongside a creek, that will take them safely into the heart of town.

*YES: a journal of positive futures*
Issue 38, Summer 2006

### Humans' influence on nature

Distinguishing a natural disaster from a human-induced one is getting more difficult. While storms, droughts, floods, and tidal waves are natural events, the degree to which they produce disastrous outcomes is heavily influenced by human actions. The Indian Ocean tsunami of December 2004, for example, showed that clearing of mangroves and destruction of other aquatic habitats make coastal communities even more vulnerable to flooding.

For the same reason people buy home and life insurance – to avoid catastrophic losses – societies need to 'buy' disaster insurance by investing in the protection of watersheds, floodplains, and wetlands, Worldwatch said.

Sandra Postel, Worldwatch Institute, July 2005

**Earth is our only home**

[There are] fundamental challenges to a manned journey to Mars: the physical safety and integrity of the astronauts. Humans have evolved to live and thrive with the force of one full Earth gravity. Living in a microgravity or zero-G environment for any length of time leads to the human body breaking down. By the time the crew got to Mars they would be in no physical shape to explore the Red Planet.

The other physical barrier to extended space travel is solar and cosmic radiation. Not only will a Mars vehicle have to include a rotating component to mimic at least fractional gravity, it must be encased in sufficient shielding to prevent the crew's DNA and internal organs suffering radiation damage. Until these problems are solved there can be no successful flight to Mars or any other distant body in space.

Howard Zimmerman New York City, US

*New Scientist,* 8 April 2006

*The problem is that people evolved specifically to overcome social constraints on inclusive fitness. That's what we're for, that's what we're good at. So no matter what kind of controls other people put on us, we're going to sit down and figure out how to get around it. We're good at cheating. That's why we're here. Maybe Neanderthal man died out because he was too honest.*

*Jay Hanson*
*Interview 21 June 2003*

**Arboreal ants build traps to capture prey**

To meet their need for nitrogen in the restricted foraging environment provided by their host plants, some arboreal ants deploy group ambush tactics in order to capture flying and jumping prey that might otherwise escape. The ant *Allomerus decemarticulatus* uses hair from the host plant's stem, which it cuts and binds together with a purpose-grown fungal mycelium, to build a spongy galleried platform for trapping much larger insects. Ants beneath the platform reach through the holes and immobilize the prey, which is then stretched, transported arnd carved up by a swarm of nestmates. To our knowledge, the collective creation of a trap as a predatory strategy has not be described before in ants.

*Nature,* 21 April 2005

**Good examples (1)**

The home of the Melbourne city council has hanging gardens and water fountains to cool the air, wind turbines and solar cells supply up to 85 per cent of its electricity, and rooftop rainwater provides 70 per cent of the water used in the building.

Garbage trucks in San Diego, USA, run on methane taken from the landfills they supply with rubbish.

In Austria, Vienna has distributed 1500 free bicycles across the city.

*New Scientist,* 17 June 2006

**Good examples (2)**

Almost a billion city-dwellers around the world grow at least some of their food, or grow food for sale. In Kolkata, India, 20 000 people farm on old waste dumps, or raise carp in sewerage effluent tanks. Peruvians raise guinea-pigs for meat in the squatter settlements of Lima. The people of Sarajevo survived the siege in the 1990s by cultivating wasteland. Haitians grow vegetables in old truck tyres. In the UK there are 300 000 urban allotments on which fruit and vegetables are grown.

*New Scientist,* 17 June 2006

**Cape Grim report**

The annual atmospheric report from Tasmania's Cape Grim contains both good and bad news. The bad news is that growth in concentrations of carbon dioxide is accelerating. In the 1950s CO2 readings grew by one part per million (ppm) per year. In 2005 it was two ppm, the fourth successive year of higher growth.

The good news is that methane concentrations last year fell slightly, to the level of six years ago.

*Australasian Science,* July 2006

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, by 15 September 2006.

Contributions may be sent electronically. This journal was prepared using Microsoft Word, Text Wrangler and PageMaker 7.0.2. Contributions may also be sent on paper.

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 and also contributed the unattributed items and provided the quotations.

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