

# Nature & Society

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## Editorial

The United States Center for Public Integrity estimates that there are 2430 Washington lobbyists (about 15% of the total) working to prevent limits being put on carbon emissions. No wonder President Bush, an oil man himself, listened to them. Thank goodness President Obama has wider vision.

Guy Pearse's Quarterly Essay *Quarry Vision: coal, climate change and the end of the resources boom* (issue 33,

2009) has detailed the way Australia's politicians, political advisers, mining industry executives and trade union leaders flit between these various roles, in a game of musical chairs. They are so blinded by their quarry vision that they cannot conceive of quarry-dependence ever ending, they cannot accept any need for change or see the opportunities they are missing. Hence a carbon trading scheme that will probably fail, and yet for which the industry is going to be handsomely compensated.

This is a tragedy for the world, and for Australia. This is one country that could certainly cut its emissions by a number of energy efficiencies that would actually benefit the general population. It is one country that could almost certainly generate almost all the energy it needs by alternative means, especially hot rock and solar power schemes. While our Government dilly dallies, China, the USA itself and other countries take up the technologies our scientists have invented, and often take the scientists themselves. Already we are having to buy the very products from these other countries.

Local and State Governments are largely proceeding with business as usual in transport, housing and population policies. They all want larger populations, housed in the same energy dependent and wasteful way as of yore. Is it the

result of stick-in-the-mud developers, builders and suppliers who plod on their way like draughthorses with blinkers on so they do not notice the green pastures down a side road, or get startled by anything unusual?

A small number of architects and builders, catering for clients who realise the greater comfort and energy-security of good solar design, have shown that solar-efficient homes can be built and are a pleasure to live in. At the moment these homes are more expensive to

build, partly because they are one-off, but they save a lot in running costs and will ensure much more comfort for the residents in extreme weather conditions. Why do regulators and builders show such reluctance to embrace these ideas?

Governments have been prompted by the financial crisis to provide billions to stimulate the economy, but very little of the stimulus has been directed at gaining long term benefits. In last summer's heatwave Melbourne's commuters suffered as train lines buckled and hundreds of trains were cancelled. Suburbs were blacked out as the Basslink power line, built only to cope with temperatures below 35 degrees, failed in the 40+ temperatures. Do governments and residents really

*I think Kevin Rudd has underestimated how determined Australians are for genuine and urgent action on this, the biggest issue of our time. In doing so, he contributes to a growing vacuum in Australian politics.*

*Guy Pearse, Quarry Vision, 2009, p74*

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want to put up with more of these dangerous situations year after year?

Sometimes one has to feel sorry for governments that do seek a better way forward, when whatever they propose meets opposition – such as large wind farms, or the Severn Estuary tidal barrage in Britain, or the huge energy network that would link all Europe, from Iceland’s geothermal energy to solar farms in the Sahara, with every conceivable form of alternative energy in between. But while it is true that there are reasonable objections to many of these, especially when they are scaled up to very large sizes, this does not excuse Australia. Hot rock power generation will not be unsightly, and it will utilise the skills of miners and engineers. Both solar thermal generation and hot rock will supply base load power, will not take up huge areas of land, and will largely be in desert areas. Photovoltaics will be more efficient here than in most other countries and could be incorporated in every building in Australia without looking unsightly.

Considering the consequences of continued massive coal use both locally and for export, we could and should change. We should congratulate our Government on its intention to protect the Coral Sea; but we must point out to them that continuing the coal industry as usual will undermine that good intention. Ocean life suffers from the rising temperatures civilisation is inflicting on it, but it also suffers from the acidification caused by adding carbon dioxide to the atmosphere. Arthropods, corals, shellfish and myriads of tiny sea creatures lower on the food chain will all be affected and the whole marine ecosystem will suffer.

Even if carbon capture and storage proves feasible for power stations it will be too little, too late. We must progressively cut down all fossil fuel use, especially coal. We must act with urgency on biosequestration of the carbon that is already in the atmosphere. As one thing we can do unilaterally, we should cease logging our own old growth forests. We should

work with the international community to protect the world’s remaining natural forests, and we should encourage reforestation here and overseas.

Our governments at all levels should also support farmers who are practising conservation farming that sequesters carbon in the soil. This, like so many of the measures suggested above, has multiple benefits, improving the fertility and water-holding ability of the soil. And, as our leaders are wont to say, it is all about jobs, jobs, jobs, then the government should ensure that those jobs also bring multiple benefits, in equipping the population with skills for the future, not the past, ones that ensure the continued habitability of the planet and the wellbeing of its inhabitants.

*Not one credible piece of economic research suggests that making deep cuts in emissions by 2050 would cause even a temporary recession, let alone “crash” the economy, or “cut GDP” or send energy prices spiralling or cause whole industries to shut down or flee our shores. Every serious study of the costs finds that deep cuts would delay the trebling of the economy and doubling of real wages by a few years at most later this century. The same analysis finds that acting sooner generates about a quarter of a million jobs more than would delaying, and many of the steps that reduce our exposure to carbon prices saves rather than costs money.*

*Guy Pearse, Quarry Vision, 2009, p23*

Both morality and self-interest dictate that we should act to reverse the damage we have done and continue to do to the living world around us. Remember that our good health and our very survival depend on the web of life of which we are a part.

**Jenny Wanless**

### **James Lovelock - The people must lead their leaders**

The time has come when all of us must plan a retreat from the unsustainable place that we have now reached through the inappropriate use of

technology: far better to withdraw now while we still have the energy and the time. Like Napoleon in Moscow we have too many mouths to feed and resources diminish daily while we make up our minds. The retreat from Dunkirk was not just good generalship: it was aided by an amazing expression of spontaneous unselfish good will from those numerous civilians who willingly risked their lives and their small boats to cross the channel to rescue their army. We need the people of the world to sense the real and present danger so that they will spontaneously mobilise and unstintingly bring about an orderly and sustainable withdrawal to a world where we try to live in harmony with Gaia.

*The Revenge of Gaia, 2007, p.192*

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Tel: +61 (2) 6125 2526

Fax: +61 (2) 6125 1756

E-mail: [office@natsoc.org.au](mailto:office@natsoc.org.au)

Websites: [www.natsoc.org.au](http://www.natsoc.org.au)  
[www.biosensitivefutures.org](http://www.biosensitivefutures.org)

## 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 route 3 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.

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## James Lovelock - Sustainable retreat

We as a civilisation are all too much like someone addicted to a drug that will kill if continued and kill if suddenly withdrawn. We are in our present mess through our intelligence and inventiveness. It could have started as long as 100,000 years ago, when we first set fire to forests as a lazy way of hunting. We had ceased to be just another animal and begun the demolition of the Earth... we misused energy and overpopulated the Earth, but we will not sustain civilisation by abandoning technology. We have to use it wisely...with the health of the Earth, not the health of people in mind. This is why it is much too late for sustainable development; what we need is a sustainable retreat.

The Revenge of Gaia, 2007, p.8

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## Coming NSF meetings

For the latest information visit our website and click on 'What's On'. The venue for all the following meetings will be the CSIRO Discovery Centre; turn up the hill from the roundabout on Clunies Ross Drive.

### Wednesday 17 June 2009 - Plants to Grow in the current climate. 7:30 pm

In this talk Ian Anderson will consider plants to grow in Canberra gardens as well as the surrounding rural landscape. although principles raised could have application in the wider Australian landscape. Emphasis will be given to growing food plants in the suburbs, blended gardens of native plants (mainly for wildlife habitat) and such food plants, as well as the potential of tree crops in rural areas. There will be reference to the significance and potential of native grasses and associated forbs for gardens as well as in rural landscapes.

[Forbs are herbaceous flowering plants that are not graminoids (grasses, sedges and rushes). Forbs represent a guild of plant species with broadly similar growth form, which in ecology is often more important than taxonomic relationship. Examples of forbs are clover, sunflower and capeweed.]

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### Wednesday 15 July 2009 - New, community-based approaches to sustainability in our region. 7:30 pm

In this talk local activist and community mobiliser Cindy Eiritz will outline the diverse range of sustainability initiatives emerging from concerned citizens in our region. She will suggest how these groups can learn from each other and cooperate while still retaining the distinct features and missions which have been at the core of their success. We are inviting representatives from a number of these groups to this meeting to share with us their successes and their visions for the future.

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At the last meeting of NSF's board, members considered the possibility of setting the time for our monthly meetings to begin at 5:30 pm rather than 7:30 pm. Please let us know if you have a preference, be it a personal one or to enable NSF to attract the best audience.

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The 'What's on' page of our website also includes a summary of NSF events back to 2006 and web links to further information about their topics.

## A greener way to leave this life

At our April meeting members were asked to consider the last stage of their life, and what they want done with their body after death.

Bryan Furnass talked about his personal experience with aged relatives allowed to die easily at home or revived to end their days in a nursing home. His grandparents had died at home surrounded by their family; it was a sad but natural time for all concerned. Now, all too often, aged people whose lives have effectively ended, are revived from what would have been a fatal heart attack or stroke to live on in a nursing home. As one who has done my share of nursing home visiting, I agree with Bryan that I do not want to end that way, and I would welcome 'the old man's friend', a bout of pneumonia with a final heart attack.

I certainly know a number of old people who, although more or less well and mobile, are increasingly resenting being alive, as life holds very little pleasure for them. I also know others who are neither well nor mobile and while slipping into dementia, cannot truly be said to be living well although they are undoubtedly alive. At this stage surely death would be a welcome visitor! Who wants to be, as Shakespeare said in the seventh of his ages of man, in 'second childishness and mere oblivion, sans teeth, sans eyes, sans taste, sans everything'.

Bryan suggested that those of us who feel averse to being *sans everything* should carry a card saying Do Not Resuscitate. Myself, I'm scared that a would-be resuscitator would not go through my handbag to look for such a card. Maybe a bracelet or a necklet would be a better idea.

What happens to our body after death is also of importance to us. If we have tried to tread as lightly on the Earth as we can, we do not want to bear too heavily on it after death. For this reason there is now interest in what is called Natural Burial, a movement that started in the UK in the 1990s.

Hamish Horne, CEO of ACT Public Cemeteries, talked about the possible options: burial, conventional or natural, and cremation. Conventional burial as now practised, is in a more or less ornate

coffin, plastic lined, buried deeply (about 180cms) in which the body has no natural interaction with the soil or its organisms. Natural burial (not available in Canberra as yet) is in a biodegradable shroud or coffin, buried about 90cms deep.

About seventy per cent of Canberrans choose cremation, but the practice is being questioned, because of the high energy costs of the actual process, not to mention the flue gases which contain various noxious emissions such as mercury from tooth fillings. However the ashes take up almost no room, and can be pigeon-holed in a wall, or just scattered on the ground. Where space is at a premium cremation is a good option, and in Chinese cities it is mandatory. The energy costs of cremation are about the same as a month's normal use of a car.

Conventional burial does not have initial high energy costs, but the upkeep of a lawn cemetery incurs ongoing costs in watering, mowing and other maintenance. On the other hand the plots are very tightly packed, and can accommodate far more burials than can a natural cemetery. The latter tend to be bushland areas, with no grave markers, or maybe a plaque on a stone. The grave site may only be identifiable

with the use of GPS coordinates. The cemetery may be a bush regeneration site, providing homes for native plants and animals. Importantly the body should be available to the soil organisms, and help to nourish the ecosystem. Oh, and a caution here. Apparently the attractive new cardboard coffins are not quite what they seem. They are made out of recycled materials and do not waste good timber, but the interesting pictures on them are actually on a plastic sheet that covers the coffin.

Various other options may become available in the future, such as freeze-drying and being turned into a small quantity of powder. In the meantime, we have to choose and natural burial is available in only a few places. If there is sufficient public interest, the proposed new cemetery in southern Canberra could have an area set aside for natural burials.

Jenny Wanless

*When Britain recently issued a new 20-pound note, it put Adam Smith on the back, not T R Malthus. He doesn't fit the ethos of the moment. We don't want to think about limits. But as we approach nine billion people on the planet, all clamouring for the same opportunity, the same lifestyles, the same hamburgers, we ignore them at our risk.*

*National Geographic magazine  
June 2009*



NSF meeting report:

## The future of waste in the ACT

NSF had organised the May meeting in the light of the ACT government's quiet abandonment of the 'ACT No Waste by 2010' strategy. Some members at this meeting had contributed over a decade ago to the community consultations that led to the strategy. So, by way of background let's remind ourselves of some features of the strategy when it was launched in 1996:

"By 2010 it is envisaged that waste will have been eliminated by a community that:

- has encouraged the producers of goods to take responsibility for the form in which their products are sold to ensure that waste is not generated with the initial production, during use or at the end of the product's life
- has created an environment for developing innovative solutions to avoid generating waste
- only buys what it needs . . .
- has created cost-effective methods for recovering resources . . .
- has created industries dealing in unwanted materials."

This would be seen, even today, as a well-rounded strategy, although in 2009 we might want to make more of manufacturers' responsibility for the full environmental load of their products (including houses) over their entire lives and beyond, specifying the leadership role of government in terms of 'sticks' and 'carrots' which apply to imported products, the business opportunities – both local and centralised – in recycling and detoxifying, dealing with demographic change and the rise in apartment living and, finally, in evaluating and monitoring publicly the effectiveness of each part of such a comprehensive strategy.

Dr Maxine Cooper, ACT Commissioner for the Environment, provided a good overview of the ACT's present position and, in her examples, illustrated the importance of coordination and in suffusing a waste-consciousness throughout the community so that we all make behavioural choices, as both citizens and as employees, that lead to the best waste outcomes.

Dr Cooper suggested that media concern about environmental matters can have the unintended consequence of leading to denial rather than time-

effort-, concentration-, and attention-costs that are unwelcome additional complications in our complicated lives: 'it's all too hard' as the vogue excuse goes.

She has calculated that each ACT citizen has an ecological footprint of 8.5 hectares (21 acres), 17 per cent larger than the national average. Another way of looking at this is that the ACT needs an area eight times its size of pristine wilderness to absorb the damage we are doing to environmental services. Too bad other urban areas need the same area to accommodate their footprints too!

Dr Cooper also highlighted the emerging issue of e-waste, saying that although old computers can be left at Canberra's main tip for recycling at \$30 a unit, the associated legislation fails to prevent individuals saving the fee and dumping their unneeded computer in their green bin. Geoff Pryor, from No-Waste Australia, affirmed that the issues and aims identified fifteen years ago were still relevant and spoke of the importance of a vision for waste and sustainability that is widely held and acted upon in the community.

Geoff also highlighted how easy and convenient it had been for political leadership to weaken as governments changed over the life of the strategy.

Geoff thought that more attention should be given to the size of landfill levies and whether they should reflect the full cost of waste disposal and recycling or whether they needed to be subsidized, providing a motivational 'carrot'.

Iome Christa runs the ACTNow waste project for the Conservation Council. She wants to see practical recycling and waste-conscious behaviour more prominent, particularly at community events and in public places. Iome mentioned that products and containers bearing the common 'recyclable' triangle symbols are not necessarily recyclable in the ACT and may therefore be sent from the ACT's recycling station to landfill.

Iome's ACTNow project aims to bring together all businesses in a given 'precinct' to share facilities and ideas, working in practical ways and learning from each other to enable the best waste outcomes rather than individual firms competing and cutting costs at the expense of the environment.

Almost every person attending contributed to the following vigorous discussion and stayed behind to continue exchanging ideas after the meeting had formally closed.

*Keith Thomas*

## Catastrophe in the MDB

John Sandeman has prepared the following article based on the talk he gave at our March meeting.

**Basic facts** (source: the Australian Bureau of Statistics and the CSIRO report "Water Availability in the Murray-Darling Basin – whole of Basin report" , Jan 2009 ).

The Murray-Darling Basin (MDB) covers 14% of the total area of Australia, contains 14% of all its farms, provides 33% of the food supply and 10% of its population. Of the total rainfall, average 531,000 gegalitres (GI) during the 2005-2006 year, 94% evaporates, 2% drains into the ground and 4% is run off with a third to a half of the available water used for agriculture; both surface and groundwater. Some 67% of the land is used for crops and pasture, divided into 43% for pasture, 20% cereals, 15% cotton, 6% rice, 6% grapes, 6% fruit and nuts 5% and 2% vegetables. Of the total population; 10% is involved in agriculture, 13% retail, 11% health and community services, 10% government administration and defence, and 9% manufacturing.

In the 2005-2006 year, a total of 7,720 GI of water was consumed. Cotton 20%, dairy farming 17%, pasture for other livestock 17%, rice 16%, other cereals 10%, grapes 7%, fruit and nuts 5% and vegetables 2%. The revenue obtained from these commodities per megalitre in 2001 (according to report in the Australian) was: rice \$200, cotton \$600, grapes \$900, fruit \$1500 and vegetables \$1800. In general the MDB uses 60% of all water consumed in Australia but generates only 6%.

The long-term average of inflows over the last century have been 9100 GI/y, while average inflows during the various drought periods have been between 4800 and 5000 GI/y. During the recent drought, that average was maintained until the 2006/7 year when the fifth lowest inflow on record for 117 years occurred at 1014 GI/y. During the 2007/8 year monthly spring falls achieved only a quarter of the long-term average and continued that reduction through the autumn period. To date the 2008/9 year is perpetuating those very low inflows and as yet there is no sign of any recovery toward the long-term average.

## Issues of management and allocation

State parochialism has inhibited changes over the years and still exists in the latest 2008 COAG agreement. Under previous state laws, 19 separate management authorities perpetuated over-allocation of water licences by all the states, driven partly by large irrigators who have the money and the power to influence local politicians and their state governments. There are examples of un-authorized diversion of river and wetland waters for crop irrigation or pasture growth. Environmental flows into the rivers and wetlands in order to maintain their health and which are in the national interest, have suffered as a consequence of these individual interests. Following the 2008 agreement, the MDB Authority (morphed from the previous MDB Commission) is formulating a new Basin Plan to put before the Ministerial Council later this year and for commencement in 2011. Its preparation involves consultation with the Basin states and communities and without firm control, that may well perpetuate some of the past mistakes.

From 2001 to 2006 water storage held by cotton irrigators fell by 70% but the water they consumed fell by only 5%, implying that the water held is far in excess of the normal requirements of their crops,

although they consistently claim that they reduce their cropped area during periods of low water inflows. In late 2007 over 1000 GI of northern catchment rainfall water was (or was to be) diverted to Queensland irrigators of which 25% was to go into Cubbie station storage to allow Cubbie to trade that water (value ~\$100 million) and overcome solvency problems. In January 2009 it seems that the Queensland government has put a moratorium on the plan. It is not clear whether the moratorium was in time to stop the diversion or prevent the sale, or both. The federal and state governments purchased Tooralie station at auction in September 2008, releasing their 14 GI/y water allocation for sale. There has been no indication as yet that any of that water has been sold and if so who might benefit.

In the 2008 agreement Victoria kept its previous 4% cap per year on water traded out of its irrigation regions and a 10% cap on its irrigation water held by non-land owners. This was one of the sticking-point issues which blocked the Howard government's

*It is only human to be concerned for the welfare of fancy birds and cuddly animals living in Rousseau-style forests far away, but these are like the dandies of our own civilisation, doing little of the hard work needed to keep Gaia going; that is done for the most part by the denizens of the soil, the micro organisms, the fungi, the worms, the slime moulds and the trees.*

*James Lovelock, The Revenge of Gaia, 2007, p.142*

attempts to bring Victoria into its Basin State's agreement and it continues to inhibit the buy-back schemes of the present federal government. Large irrigator companies also make it very difficult for smaller members to leave the industry. A New South Wales irrigator public company requires its members to pay 15 times their yearly allocation charge if they want to leave the industry.

The 70 km long "Sugarloaf pipeline" being constructed by the Victorian government will pump at least 75 GI of water each year from the Goulburn Valley to Melbourne. Not only will this reduce inflows to the River Murray itself but also remove water from the rich fruit and dairying industry in the Goulburn Valley. The federal government (under pressure?) has approved this project. Notably the city of Adelaide consumes some 216 GI/y of which 82 GI is Murray water in a "good" year and 179 GI in a dry year. But if most of the buy-back water comes from the northern reaches of the Basin there will be little left (at most 10 %) by the time it reaches South Australia. With inflows along the Murray-Murrumbidgee system presently at their lowest and likely to continue to suffer under climate pressure in the future, perhaps it is no wonder that the South Australian government is considering suing the other states for more water releases.

*The infrastructure required for Carbon Capture and Storage would be comparable to that of the global petroleum industry, only it would need to be built in a fraction of the time – and all to dispose of a waste that can be avoided in the first place with cheaper technology, much of which is already available. It would cost a fortune and arrive too late: the most expensive exercise in futility the world would ever have seen.*  
*Guy Pearse, Quarry Vision, 2009, p83-4*

### Wetland degradation

Of the 30,000 wetlands in the MDB (most on private land) there are 16 major wetlands listed under the International Ramsar Convention of 1971. These cover some 409,500 Ha and include the important Lower Lakes and Coorong of 140,500 ha. The Convention requires the signatories to use their wetlands "wisely" with effective monitoring and management and to cooperate internationally in the delivery of wetland conservation. A 2008 report "Wetlands for our Future" claims that 90% are so degraded that they may never recover, while the Wentworth group considered that 2100 to 4500 GI/y is needed to restore them to reasonable health. Some of the problems include:

1. virtually no net floodplain inundation since 1992,
2. diversion of wetland waters for irrigation; some unauthorised,

3. unsuitable land practices; including over-grazing, cropping, introduced fish species, aquatic weeds,
4. rising saline groundwater beneath floodplains,
5. lake bed exposure of acid-sulphate soils.

The Lower Lakes and Coorong seem to be in a state of near collapse. The lock and weir (1929) below Wellington on the River and the five barrages (1935) with 593 independently opening gates separate the Lakes, Coorong and Murray and manage the distribution of water throughout the region. These prevent Murray water entering the sea except when in flood and the Murray Mouth now has to be constantly dredged to keep it open.

By April this year the level of Lake Alexandrina was at -0.95 m compared to its full level of +0.75 m and water was being pumped from Lake Alexandrina into Lake Albert to prevent it from drying out completely. A major problem is the oxidation of exposed lake bed acid-sulphate soils releasing heavy metal and sulphuric acid contamination with the return of water. One radical proposal is to pump seawater into the Lakes and maintain tidal flows into the Coorong; the most southern Coorong lake is already six times saltier than seawater.

The federal government is now undertaking an environmental impact study for the long-term effects of this proposal. While this would save the Lakes from complete degradation, freshwater would be lost to the local towns and irrigators. They are vigorously opposed but their "fresh" water resource is increasingly under threat.

### Conclusions

Conditions across the Basin are in a state of near collapse brought about by continued mismanagement and overuse of water supplies through self-interest both by individuals and state governments. What is happening in the Basin is typical of how the excesses of capitalism so often use resources, namely by exploitation, often benefiting a few and when economically unviable moving on, leaving a damaged environment. The current world economic collapse only reinforces that view.

CSIRO/BOM climate models based on the IPCC scenarios predict, on average across the Basin, a future increase in temperatures and a lower rainfall; although with considerable variability across the Basin in both rainfall and water run-off. These models are based on anthropogenic emissions only, that are already exceeding the worst of the IPCC scenarios and are likely to continue to do so for some time. Further the models cannot take into account the feedback mechanisms which are now becoming more evident, such as the increasingly rapid melting of the Arctic and Antarctic sea ice, and the melting of the tundra permafrost in Siberia giving rise to lake formation and a bubbling emission of methane. After a decade or so of stable atmospheric concentration methane began to rise again from 2007.

A risk management of the Basin for the future must take these factors into account, together with the modelling predictions of extreme climatic conditions becoming more frequent and more intense. A radical shift away from the present use of water resources seems to be mandatory if the Basin is to maintain its vital position as the "food bowl" of Australia. To me there do seem to be some things that should be undertaken, namely:

1. Phase out those high water-use crops per hectare, cotton and rice. The water from cotton in the North would then be available for the downstream environment and at least into the upper Darling, while the water from rice would not be diverted from the Murray-Murrumbidgee system.
2. It seems that too many wetlands including some under the Ramsar agreement are in private hands. Taking these under federal control could prevent further degradation and assist in rehabilitation. This would also reduce pasture growth and grazing within sensitive areas and release more environmental water.
3. Agriculture activity should be concentrated on the production of essential food items and dairy products.

*In the wealthy, open societies and representative democracies, voters and politicians shy away from taking action that will cause pain to themselves or to powerful interest groups. We end up making token efforts without achieving substantive results that will benefit future generations. More than half of the world's people live in societies without democracy, the rule of law or the free exchange of information. In those societies, the powerful plunder the earth, and their fellows, with impunity and without acknowledgement of the future. In both cases humanity's behaviour is short-sighted. But in the developed world we know the consequences of our actions. We don't have the excuse of ignorance or powerlessness. Our inaction is, at root, the result of our greed, selfishness, sloth and lack of courage.*

*Peter Hall, Lumberjacks of Eden, 2007*

4. It should be mandatory for all towns to store rain water and in time install new technology presently under development, which enables the storage of run-off water from pavements as well as roofs.
5. Local towns could recycle all grey water for in-house non-potable use with any excess coupled with treated black water for local fruit and vegetable production.
6. Basin water should be used for Basin regions and towns. Adelaide may well be the exception at least until viable alternatives become available.
7. The existing MDB agreement could be strengthened to ensure that individual states cannot derail policy by intransigence, while the MDB Authority should be maintained as the

only advisory body on policy matters.

8. Local renewable energy production, particularly with solar and wind and a fast optical broadband connection into major towns, would assist with decentralising industries and enlarge local job opportunities.

Jared Diamond in his book "Collapse" outlined the fall of past civilisations through environmental crises brought on by greed and overuse of their available resources. Barbara Tuchman in her 1984 book "The March of Folly" examined how governments, together with their societies over a long period of history, had a tendency to act

stubbornly and perversely against their own best interests. The situation in the MDB has all the hallmarks of a developing catastrophe leading to a collapse. It remains to be seen whether our present federation system of government with its often divisive national and state interests will be able to prevent a complete catastrophe. Certainly the effects on the nation will be profound unless our politicians of all persuasions, can think and act nationally rather than locally.

*John Sandeman*

# Overloading Australia

Mark Diesendorf\*

Greenhouse gas emissions, peak oil, urban traffic congestion, air and water pollution, loss of soils and destruction of biodiversity are all driven by three factors: population, consumption per person and technological impact. A doubling of any one of these factors doubles the environmental impact. To address each factor requires separate government policies, so it makes sense to consider each factor separately.

The environment movement has strongly promoted improved technology (eg, by backing renewable energy and green buildings) and a minor part of the movement has begun to push for reduced consumption per person and to question the existing economic system in general. But, with a few exceptions, the movement has been very weak on addressing Australia's population, which has one of the highest rates of growth in the OECD.

This is because many people have adopted a wide range of irrational myths and obfuscations that inhibit open discussion of this issue. For example:

- Australia is a large country and so could absorb 100 million people.
- The economy benefits from population growth. (Actually, it's only a narrow group of vested interests that benefits.)
- Australia's birth-rate is less than its death-rate.
- Immigration keeps the population young.
- An additional Australian has the same environmental impact as an additional person in China. Therefore Australia's population growth is irrelevant and we should focus on limiting world population growth.
- The only way to stop Australia's population growth is to interfere with human rights.

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\*Dr Mark Diesendorf is Deputy Director of the Institute of Environmental Studies at UNSW and author of *Greenhouse Solutions with Sustainable Energy*.

- We cannot stop growth in immigration without cutting refugee intake.
- Even if we could, reducing immigration is racist and would destroy our multicultural Australia.

These myths have almost succeeded in making population issue taboo among the community. Yet they are all easily demonstrated to be false. For instance, in response to the fifth myth, Australia has the highest per capita greenhouse gas emissions in the industrialised world. Every additional Australian has a greater impact than an additional person in almost any other country. Stabilising Australia's population should be an essential component of greenhouse policy. If Australia persists with its very high rate of population growth, as recommended on irrational grounds by the Garnaut Review of Climate Change, then why can't China, India and Brazil?

*There's no better way to prove that, and why, we will not climb out of our present crisis hole on the sunny side than to read and hear reporters and the people they quote. Everybody tells us that everything they do and say is shaped by their firm look towards the future. And the problem, of course, is that nobody is actually looking at the future. Everyone looks at the past, to pick what they like best, maybe tweak, twitch and embellish it a little bit, and project in unto and into the future. But that particular kind of future is no longer available.*

*www.theautomaticearth.blogspot.com  
20 May 2009*

Most of the other myths about population are busted in an excellent new book by Mark O'Connor and William J Lines, *Overloading Australia: How governments and media dither and deny on population* (Envirobook, 2008).

Many Australians are now aware that the failure of both the Howard and Rudd governments to implement strong policies to cut greenhouse gas emissions is due to a large degree to the political power of the Greenhouse Mafia, the vested interests from the coal, oil, aluminium, steel, cement, motor

vehicle, forestry and agricultural industries that are Australia biggest greenhouse gas emitters.

Yet most people are unaware that many of the population myths originate from vested interests in rapid population growth. These population boosters include the property and housing industry; industries seeking cheap labour for low-skilled and dangerous jobs; businesses generally seeking a large pool of labour so that wages and other working conditions can be diminished; the Roman Catholic Church; and governments seeking revenue from wealthy immigrants.

One of the peak groups of population boosters is the Australian Population Institute. It has a name that could be easily confused with the Australian Population Association, the demographers'

professional association, and the motto 'populate and prosper'. It sets out a large array of population fallacies as if they were fact. On the other side, raising awkward questions about population growth, is Sustainable Population Australia, whose members include scientists, demographers and environmentalists.

One of the few leading environmentalists to speak up about the need to limit Australia's population is Ian Lowe, president of the Australian Conservation Foundation. At the recent launch of *Overloading Australia*, Professor Lowe pointed out that Australia's current population growth rate places us on course for about 100 million people by the end of the century, far more people than Australia could sustain. He pointed out that, even in the short term, population growth would make nonsense of most of our attempts to reduce greenhouse gas emissions or prevent environmental damage.

It is time to address the issue of Australia's population issue properly. Australia must terminate the baby bonus; strongly support voluntary birth control programs in Australia and overseas; and substantially reduce immigration by cutting our large business/professional component while increasing the small refugee component (which is currently only 5% of total immigration).

*This article previously appeared in The Canberra Times and is reproduced here with the kind permission of that newspaper and the author.*

*... this is why there is so much denial about it being necessary to give up the car and all the current talk about resorting to biofuels to continue feeding the car addiction. Biofuels amount to burning one's food and destroying what is left of the topsoil in order to continue driving. This is why so many Americans would forgo a healthy diet, a reasonable work schedule, education for their children, needed medical treatment and even give up their house, rather than give up their car. Not having a car makes one, within the American suburban landscape, a non-person.*

*DmirtyOrlov  
Reinventing Collapse 2008, p 24*

countries. And on this topic, although the book is written for Australia, the plan could be modified and turned around to face south in the Northern Hemisphere.

Derek is an architect who has designed, built and lived in several solar efficient homes. He has also retrofitted a standard bought house, the one he now lives in, and made it much more efficient and comfortable, so he knows what he is talking about. For years he has been writing and speaking about this issue, not just to interested individuals, but to the housing industry and local government. So far the response from these bodies has been at best polite interest, before proceeding with business as usual. Even in the ACT, with its comparatively knowledgeable population, the newest subdivisions are designed with absolutely no regard for solar access.

All this is appallingly short sighted on the part of the government planners and very disappointing, as it seems that nothing will change until Governments themselves demand action from developers and builders. Yet anyone who is used to air conditioning and who has experienced the heat in a building in the middle of a heat wave when the power fails, or the cold during a black out in winter, should be able to appreciate the need for buildings such as the ones Derek has designed, and the benefits they will bring the residents.

The book is, amongst other things, a lament about this state of affairs. Derek is only too well aware that inertia is hard to overcome, but he is driven to keep trying to save us from ourselves and to help us weather (literally) the low carbon future we will have to have. He is also well aware that the house itself is part of the solution, but so are the actions of the occupants, such as opening the vents, or closing the curtains at the appropriate times. It has been said that a solar passive house needs active occupants; to this end Derek recommends that all such houses come provided with an owner's manual, explaining how to make the most of the design of the building.

*Jenny Wanless*

## Low Energy Affordable Housing

This is the latest of Derek Wrigley's books about solar powered, energy efficient and comfortable housing. It contains plans, explains how and why they work, and the various benefits for their occupants, and the wider community. (After all we will all benefit when energy wastage is reduced, and when our power grids are supplied by distributed photovoltaic cells.) An additional feature in the book shows provision for making the home safer from bushfires, surely a growing concern in Australia as it is for California, and various Mediterranean

## Paint the town light

The Solar Housing Group led by NSF member Derek Wrigley is beginning to achieve changes to planning laws in the ACT. They were advised this month that the regulations preventing 'white' roofs will shortly be rescinded. However, as John Sandeman (another NSF member active in the Solar Housing Group) points out, this is somewhat pointless unless black or dark coloured roofs are not banned at the same time.

Steven Chu, the Nobel prize-winning physicist appointed by President Obama as Energy Secretary, wants to paint the world white. He advocated in May a global initiative to change the colour of roofs, roads and pavements so that they reflect more sunlight and heat. Professor Chu said that this approach could have a vast impact. By lightening paved surfaces and roofs to the colour of cement, it would be possible to cut carbon emissions by as much as taking all the world's cars off the roads for 11 years, he said.

Building regulations should insist that all flat roofs were painted white, and visible tilted roofs could be painted with "cool-coloured" paints that looked normal, but which absorbed much less heat than conventional dark surfaces. Roads could be lightened to a concrete colour so they would not dazzle drivers in bright sunlight. Pale surfaces reflect up to 80 per cent of the sunlight that falls on them, compared with about 20 per cent for dark ones, which is why roofs and walls in hot countries are often whitewashed. An increase in pale surfaces would help to contain climate change both by reflecting more solar radiation into space and by reducing the amount of energy needed to keep buildings cool by air-conditioning.

Professor Chu said that his thinking had been influenced by Art Rosenfeld, a member of the California Energy Commission, who drove through tough new building rules in the state. Since 2005 California has required all flat roofs on commercial buildings to be white; the measure is being expanded to require cool colours on all residential and pitched roofs.

Dr Rosenfeld is also a physicist at the Lawrence Berkeley National Laboratory in California, of which Professor Chu was director. Last year Dr Rosenfeld calculated that changing surface colours in 100 of the world's largest cities could save the equivalent of 44 billion tonnes of carbon dioxide — about as much as global carbon emissions are expected to rise by over the next decade.

At the 21 January NSF talk by Walter Jehne, the suggestion was made that all roofs in Canberra should be painted white as a means of reducing the albedo of our little patch of the planet.

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## Activism

The people can choose anything they want. We, the people, have the power to shape the face of our

country... Remember the reply from Eugene Debs' (the great labour leader) to the reporter, when he was asked at the end of his career "Mr Debs, what's your greatest regret?" He replied "My greatest regret is that under the constitution the people can have almost anything they want, but it seems like they don't want much of anything at all". All this can be changed by vigorous civil and political action by the American people ... [It would take] far less time, far less money than they spend on a fraction of their hobbies. Never confuse personal freedom with civic freedom. We have a lot of personal freedom; civic freedom means that we

*In the long run, as coal becomes less reliable and more expensive, cleaner choices will become more economically attractive. Ultimately, however, the decision to withdraw from the coal trade is a moral one. It recognises that not everything that is profitable is desirable, and sees dealing with our greatest carbon liability as being in the long term interests of the nation and the world. If Australia did announce a coal phase-down plan, it would be one of the most important symbolic moments in the global struggle against catastrophic climate change... setting a very powerful example of national altruism for the benefit of all.*

*Guy Pearse, Quarry Vision 2009, p.90*

have to start doing. No more excuses, no more rationalizing our futility, no more "You can't fight City Hall or the US government". If we want to look our grandchildren in the eye and answer their question "Where were you when this world or country were falling apart?" We don't want to say to them "We were too busy updating our profiles on Facebook".

Ralph Nader, as candidate for the US presidency, 16 September 2008

(Transcribed with minor edits from an internet video).

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With modernity's stress on freedom, modern enlightened institutions have in fact succeeded in nothing so much as conformity.

John Zerzan, *Twilight of the machines* (2008) p 119

## Leonard James Webb (AO) A Tribute by John Harris

Len Webb died November 25, 2008 at the age of 88. Here, I pay tribute to a key feature of Len's remarkable life that I feel resonates with *Nature and Society Forum* and its voluntary work: his quest for a holistic understanding of the interaction between people and nature. The 1990 publication *Australian Tropical Rainforests: Science, Values and Meaning* (Editors: L.J. Webb and J. Kikkawa) illustrates this feature well. Its subtitle comes from the great poet and conservationist Judith Wright. Over many years of collaborating and working for nature conservation, Len and Judith became close friends and Judith's poetry deeply influenced Len's approach to ecology. Judith felt the paralyzing separation between the arts and the sciences and thought that feeling and intellect 'need only a reimagining' for humans and nature to meet again. In the introductory chapter, Len wrote that 'science must expand its horizons and accept the relevance of holistic thought that involves additional non-rational, and so far unmeasurable phenomena in the awareness of humans'. Len was a holistic ecologist.

Len saw ecology as an unrestricted science and argued that the search for solutions to 'ecological problems' required engaging with other relevant disciplines, and one's capacity for integration. Relevant disciplines included 'the social sciences, the humanities, arts and even religion'. On the other hand, 'problems in ecology remain within the technical competence of a particular discipline or a combination of several related ones, i.e. as restricted science'. Len's quest for holistic understanding carried him beyond the first two traditional motives of western science to contemplate the third: 'The first is to explain, as a kind of curiosity, the natural world. The second is to control the natural world, which leads to technological invention and manipulation (taming) of nature.... There is [also] a third motive of science which may not promote answers to the 'ultimate questions' about ourselves but which would enhance the ethical perspectives of scientists prepared to try it...'. This 'reimagining' of science would take in the root of scientific imagination, wonder. Moreover, wonder is two sided. Wonder is wondering at and wondering about. Wondering at is watching and

Len Webb spent most of his professional life at CSIRO, retiring as Senior Principal Research Scientist in the CSIRO rainforest Ecology Unit in 1980. He was active with various environmental organisations both within Australia and internationally. He was awarded the inaugural Gold Medal of the Ecological Society of Australia and the ANZAAS Mueller Medal, as well as the AO. In 1990 Robyn Williams honoured Len as one of 13 "Five Star Greens".

reverencing; wondering about is analytical, and both inspire the sciences.

Rainforest was the source of Len's ecological identity and fired his metaphorical imagination. He found that through his fieldwork he discovered rainforests as places for inspiration, creativity, connectivity, purpose and renewal. However, it was not always this way. Initially, Len sought useful chemicals, classified their structural complexity and helped in the production of computer models. Then, especially after realizing their great antiquity, Australian rainforests came to claim far more of his empathy and aesthetic sensibility as a metaphor of community. He had to stand up for the forests when they were threatened by economic development. Experiencing rainforests also informed his spirituality or religion with a little 'r', as he used to say. Len's sensibility and passion was such that he studied

rainforests as an 'insider' and an 'outsider'. His insights came from empathy and analysis. Studying Australia's rainforests was for Len half way between poetry and biology; 'deep' not 'shallow ecology'. Thus, his rainforest journeys brought him to the recognizable interrelatedness of all life and that nature does not just do things, it does things to us.

## Roll Call of the Assembled Beings from the Soil

I am the Living Earth. I am the softened tissue of rocks; baked by the sun, split by ice, carved by water and winnowed by the wind.

I am interwoven by myriads of tiny plants and animals that pulse and breathe. I am the invisible universe of sparkling molecules in the infinity of living soils and bless the mantle of the globe.

I am the carpet of the biosphere, the floor of the forest, the seed bed of all plants – and my living substance nourishes all roots and all leaves that rely on the sun and rain to make green sculptures out of clay.

In the tall dim damp rainforests I house the bulk of animal life, and support the endless upwards toiling of trees and coiling of vines. I am the bottom line of all grand symbiosis in forest biology.

I am the source of mineral molecules in lovely flowers born high among the birds in the forest canopy; I am the energy sink, the lovely muddy frugal cemetery for recycling all the forest's elements in the transitions between life and death.

Touch me, smell me, I am life's essence in ecology's earnest cycles. See me, hear me, you humans who pass me by with your round computer heads rocking in the forest sky above me. Spare me a thought, you humans who depend on me; remember me as I die before you, when you take away my forest coverings and still the microbes that give me life, me the Living Earth.

Take off your shoes, touch me with your fingers, let your skin tingle as it touches mine.

Shift your gaze sometimes from the stars and remember heaven beneath your feet. Remember me when the sun burns and the waters gouge me, be kind to the forests that remain, and protect them from senseless cutting.

Remember, like me, you are already eroding. Know this: like me, you are only dust when you are dead. Accept this: unlike you, I am closer to recreation as the living earth, to genesis.

Len Webb, 9 February 1989

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## Forests as Biotic Pumps

Vast forests such as the Amazon and ones in tropical Africa are often called the lungs of the planet, but two Russian meteorologists from St Petersburg are now arguing that forests are the earth's heart as well, generating winds that pump water around the globe.

Their idea is based on the fact that as water vapour condenses to liquid it takes up less space, so lowers the air pressure around it. Evaporation is stronger over coastal forests than over the nearby ocean, so as condensation lowers the pressure more air moves in. This generates wind that blows the moisture further inland. The process repeats itself so if forests extend inland the rain bearing winds push further inland too.

In places with large forests from the coast to the interior, rainfall is as strong inland as it is on the coast. In the Congo 2000mm of rain falls on the coast and also right into the interior. The same is true in the Amazon, in the Siberian Arctic and the Mackenzie River Basin in northern Canada.

In contrast, regions without coastal forest become exponentially drier inland. West Africa and Australia illustrate this. Much of the USA, where forests are largely degraded, is on the way to desertification.

When Makarieva and Gorshkov published their hypothesis in an obscure journal two years ago it was ignored or dismissed. Now it has received support from a British scientist at the Institute of Tropical Forest Conservation. Doug Sheil and his co-author Daniel Murdiyarto say that conventional models predict a 20 to 30 per cent decline in rainfall after deforestation. If the

Russians are right then even localised clearing might lead to the entire continental climate becoming arid, with rainfall declining by 95 per cent.

Many other forest scientists are now intrigued by the idea and think it may be a missing part of the puzzle. They know that coastal rainforests do help to maintain rainfall far inland but current models do not satisfactorily explain why.

If large forests help to kick start the global water cycle, then their importance has been underestimated. But at least we can replant forests and give the pump a boost.

*New Scientist*, 4 April 2009

*We have to understand that the 'silent spring' did not come about simply from poisoning by pesticides; the birds died because there was no longer space for them in our intensively farmed world. There are so many humans now aiming for a first-world lifestyle that we are displacing our partners on the planet, the other forms of life. We have to realise that cutting back emissions of greenhouse gases is only part of what we have to do; we have also to stop using the land surface as if it was ours alone. It is not: it belongs to the community of ecosystems that serve all life by regulating the climate and chemical composition of the Earth.*

*James Lovelock  
The Revenge of Gaia, 2007, p.139*

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## Retaining critical vigilance

... when we "know the answer," critical intelligence goes to sleep. Getting our mental gymnastics out of the way is a life-saving trait for one who is navigating life in the simplicity and immediacy of a carnivore infested forest; it is a deadly dangerous trait for one who is navigating our complicated, alienated modern world. All the more so when the "observations" on which we rely are mostly second-hand information fed to us by a pack of liars.

Pondurenga Das, 26 April 2009 (via e-mail)

## Farrago

### Unintended consequences

In *New Scientist* (5 April 2008) Fred Pearce reported that a study of alpine lake sediment in the San Juan Mountains downwind from Arizona and New Mexico showed that those areas were not inherently dusty before the introduction of cattle in the 1800s. Whereas in the great plains further north herds of bison had grazed on tough grass species that could cope with such use, in the dry south western regions of the USA there had never been many grazers.

When the great cattle rush was on in the nineteenth century, with ranchers moving mobs in to take advantage of the new space, millions of grazing mouths stripped the grass while hard hooves broke the surface of the soil. Lake sediments reveal that dust levels rose fivefold at the time and have remained high ever since, with just a slight decrease from the mid twentieth century.

A recent report in Australia said that heavy machinery is being used to place felled trees into the Darling River to replace snags that were removed from the river to clear the way for nineteenth century river boats. The removal would have been done by men and bullocks. Now trucks are bringing dead trees considerable distances from power line clearances and such like. It is hoped that the new snags will provide breeding and resting sites for native fish species to help their populations to recover.

And so we bungle on, harming the systems that have supported life, and then having to try to rectify the problems that we have created.

*It appears that over the four decades since the UN Stockholm conference on the human environment gave us 26 principles by which humanity could live adequately without destroying the planet, we have preferred to ignore sustainability and, at least in the Western democracies, have given our support to leaders who offered to make us richer. It could be said we have voted to steal the future from our children.*

*Robert and Brenda Vale, in Time to eat the dog, 2009, p 24*

### Evolution on the wing

Hovering is energy-intensive, so humming birds have evolved the highest metabolism of any animal to enable them to hover while drinking nectar from long tubular flowers.

Humming birds exist only in the Americas: in other places plants that have such flowers have evolved perches for nectar gatherers. This should leave tree tobacco, a South American plant that has invaded South Africa, bereft of pollinators. But it is not so. The native malachite sunbirds, which had been seen hovering occasionally, have learnt to hover for longer periods, and some now get most of their winter food from tree tobacco flowers. The sunbirds used to migrate out of the region in winter because of a paucity of food but now they stay put. This assists the tree tobacco to survive and spread.

*New Scientist*, 18 April 2009

### Deeper understanding

Metaphor is important because to deal with, understand, and even ameliorate the fix we are now in over global change requires us to know the true nature of the Earth and imagine it as the largest living thing in the solar system, not something inanimate like that disreputable contraption

'spaceship Earth'. Until this change in heart and mind happens we will not instinctively sense that we live on a live planet that can respond to the changes we make, either by cancelling the changes or cancelling us.

James Lovelock, *The Revenge of Gaia*, 2007, p.21

### Plastics peril

... hard plastics are used in lots of things like baby bottles: they all leak alphasphenol (bisphenol A) into their contents. Now alphasphenol was originally synthesised as an oestrogen replacement. It wasn't quite powerful enough for that, so now babies all over the world are being fed an oestrogen replacement; in fairly sizeable quantities the world is getting loaded with this stuff. It's never been tested for safety in human beings. Almost none of the chemicals we are releasing have been tested for what they do in ecological systems but there's tens of thousands of them out there. They haven't been tested singly, they certainly haven't been tested in two way synergisms or three way synergisms or on up to ten thousand way synergisms and yet we just release them and many of them aren't used in ways that you would feel are really essential to humanity.

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

## Chinese sun power

China is getting really serious about solar power. A proposal has just been finalised for billions of dollars of incentives for solar farms and rooftop panels, as part of the Government's \$636 billion economic stimulus package.

China is the world's leading manufacturer of photovoltaic panels, but 95 per cent of its products have been exported. The plan now is to have a huge boost to local use, along with extra spending and policy support for nuclear, wind and biomass power. They are looking to raise the share of renewable energy (excluding hydro) in the country's energy supply from 1.5 per cent to six per cent

*The Canberra Times*, 30 May 2009

## Chinese emissions

Making goods for export accounts for a third of China's carbon emissions. The Chinese government says that these emissions are the responsibility of the countries that import the goods.

*New Scientist*, 28 February 2009

## Direct experience

Civilisation substitutes mediation for direct experience, distancing people from their natural surrounds and from each other.

John Zerzan, *Twilight of the machines* (2008) p88

*Obama succinctly pinpointed the half-dozen failings of the Western (particularly US) media. First is the putting news values such as conflict and bizarreness before information. Second is the failure to put things in context. Third is the prominence of ideological opinion. Fourth is the shallow convenience of the observance of balance and objectivity. A he-said-she-said piece quoting both sides of an issue may appear balanced and objective, but does not give the reader much understanding of the issue. Fifth, is the putting of words into an interviewee's mouth. Sixth, is the refusal to publish facts contrary to the publisher's line.*

*Crispin Hull, The Canberra Times*  
24 January 2009

## Straw houses survive earthquake

Straw-bale houses are popular for environmental reasons: they are cheap and provide good insulation for hot or cold weather.

Darcey Donovan, a civil engineer, was designing straw-bale houses in California in 2005, when the Kashmir earthquake killed 75,000 people. She volunteered to help with the recovery and worked on a women's community centre made of straw-bales.

Later she came up with a design that could be made cheaply, mainly from local materials. The foundations were made with sacks of gravel and the base used clay and sand mixed with cement. The straw-bale walls could be covered with a plaster made from clay, sand and chopped straw. In a single storey building these wall were strong enough to

hold up a corrugated sheet metal roof, without any need for a timber frame.

Donovan has founded the Pakistan Straw Bale and Appropriate Building organisation to promote this form of construction. She tested her design on a quake simulation table at the University of Nevada: it stood up to a series of eight earthquakes of increasing intensity, the biggest one greater than the 7.6 magnitude Kashmir quake.

As most people who die in earthquakes are killed by collapsing buildings, this project could save many lives.

*New Scientist*, 18 April 2009

## Forest ecology

In a sense, the forest of Oulanka [in Finland] is not made up of trees. The trees are woven together into a forest by the biotic community at their roots, by the stunning variety of beetles, plants, lichens, and mushrooms. These species are all sheltered by the canopy of branches above them, and in turn they help to break down and circulate nutrients in the soil. Above all, the forest is woven together by wood ants ... The ants recycle everything around them including dead insects. They farm aphids for their honeydew. Wherever there are wood ants there are also richer populations of earthworms and richer nutrients in the soil. ... In themselves, the ant colonies – some of which may be as old as Oulanka's mature trees – constitute large-scale organisms that suppress the presence of other insects. If all the biomass in an ant colony were concentrated into a single individual capable of wandering over the landscape and showing its true biological proportions, it would tower over even the biggest bear. In short, wood ants play a vital role in the forest of Oulanka. they are its keystone species.

Verlyn Klinkenborg in *National Geographic*, June 2009



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 25 July 2009.

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

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