

Nature & Society

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Editorial

Looking at pictures of would-be escapees from Hurricane Rita stranded on freeways choked with stationary cars, I wondered what was going on in the escapees' minds. They would have felt fearful, frustrated, impotent and probably angry that with our modern technology and apparent power to do what we want, they were actually helpless.

As Dr Johnson wrote, imminent execution concentrates the mind wonderfully, but on what? Is it fear of the unknown or the threat of eternal punishment? Is it repentance and prayers for forgiveness? Is it anger or plans for escape and vengeance?

Depend upon it, Sir, when a man knows he is to be hanged in a fortnight, it concentrates his mind wonderfully.

Samuel Johnson 1777

So the increasing price of petrol and uncertainties of supply are concentrating the modern mind wonderfully, but again, on what? Many people concentrate on the need for government to reduce the price of fuel. Others concentrate on alternative fuels, especially ethanol. Some people are concentrating on buying fuel and cutting back on other expenditures. Other people are, at least, doing something useful, such as driving motor scooters rather than cars, or using public transport.

You will notice a prejudice in that last statement. Cutting back on petrol use is a wise move: advocating ethanol is not. Why, especially when the Australian Medical Association is advocating ethanol/petrol blends as a way to reduce air pollution?

There are various arguments against ethanol use, some trivial, some certainly amenable to technological solutions. Certainly Brazil seems to have conquered the technical problems and has produced vehicles that can run on petrol, ethanol or any blend of the two.

The case against ethanol is far more serious. Ethanol is produced from crops that, by the way they are grown and harvested, are big

consumers of the very energy the fuel is intended to conserve. There can be little energy profit in this transaction when the fuel inputs of fertilisers, planting, harvesting transporting and processing are taken into account.

There probably is a place for biofuels in the future, but it will be on a small, localised scale, producing fuel from crop residues or even from recycled cooking oils. Bio-engineered algae grown in tanks, requiring only water and sunlight as inputs, are another possibility. But

such biofuels will need to be reserved for essential services, not for running around in ever expanding circles as is our current wont.

However the present oil crisis is a wonderful opportunity to get governments, businesses and private individuals to concentrate their minds on a solution to a whole range of problems that are as serious as would be our own executions. What everyone needs to recognise is that it is not a temporary phenomenon. There may be fluctuations, but in general oil supply is going to go down, and prices up, from now on.

Everyone needs to realise how intrinsic petroleum is to our modern way of life, and the disruptions and disasters that will be caused as oil runs out. For those readers who did not take a great deal of notice of the four central pages in the August/September issue of this

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journal, go back and read it thoroughly. It was designed as a lift out or pamphlet, and copies can be ordered from the office. It pointed out that nearly everything we do depends on oil to some extent. If its decline does not concentrate the collective mind, goodness knows what will.

That concentration must not be on temporary relief or quick fixes. We need to reorganise everything pertaining to our lives. First and foremost we must practice energy efficiency and invest heavily in it. We must invest in and promote all the solar technologies including wind generators. We must design and use buildings that do not waste energy or water.

Furthermore we must change our mindset, so we stop thinking of 'energy saving devices' that use fossil fuel to save our own, and instead use our energy to save fossil fuel energy. This would have immediate benefits for much of the population. It would reverse the race to obesity as people used their muscles more, providing much needed weight training and aerobic exercise. It would reduce air pollution and oxygenate the body, thus helping to keep us healthy.

We must hope that the devastation of New Orleans by Hurricane Katrina concentrates the minds of Americans and particularly their Federal Government on the dangers of climate change. The effects of a warming world will be many. The list goes through extreme weather events, the salinisation of coastal aquifers, the drowning of cities and farmland, increased disease for humans, the alteration and destruction of many habitats, the loss of many species of plants and animals and much more.

If extreme weather could force all governments to understand that 'business as usual' is a recipe for disaster no matter where you are or what your business is, then we could change before the oil runs out. The sooner we change then the better prepared we could be for life without oil and life without many of the amenities to which we have become so accustomed. If we do not change until

absolutely forced to then we, or our children, are in for a very rocky ride indeed.

Jenny Wanless

The NSF library

Two books donated to the NSF members' library this month are *The Return of Scarcity* by Nugget Coombs (1990) and *Entropy: Into the Greenhouse World* by Jeremy Rifkin (1989). I opened each book at random. In the first I read '... the essential truth that because the world's resources are exhaustible, unlimited growth is as much a contradiction of natural law as perpetual motion.' In the second

we find Rifkin saying, after describing a massive solar energy proposal by a US corporation, '... these schemes are obviously solar technologies developed by a fossil fuel mentality; that is, they attempt to concentrate a diffuse solar flow as much as possible in the hope of turning it into a centralized energy stock, much like coal and oil'. Thanks to member Jim Were for donating these two classics.

Well, we in Australia have a long and proud history of innovation going back to the stump jump plough, but the trouble is that we've engineered our society in such a way that simple innovation won't fix it. We've laid out our suburbs and we've laid out our roads as the only way to deliver food, and goods and services, and we are just not structured in a way that going to allow some innovation to save us. We have to change the way we live.

*Andrew McNamara MP
(Qld, Hervey Bay)
interviewed 24 August 2005*

The NSF Committee 2005-2006

The Management Committee comprises Rory Eames and Wendy Rainbird (co-ordinators), Jenny Wanless (secretary), Ian Anderson, Stephen Boyden, Andrew Chalklen, Catherine Gross and Brett Odgers. Please contact any committee member to discuss the work of NSF or to offer support for our activities and projects.

NSF Annual General Meeting

The AGM was held on 21 September and a copy of the Coordinators' report for the year is on the NSF website. Copies are also available from the NSF office.

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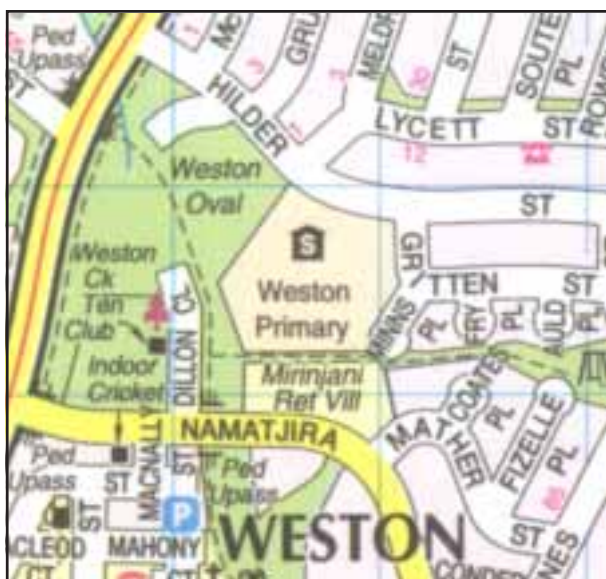
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Where we are:

Our meeting room and office is in the south-west wing of the Weston Park Primary School.



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

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

Forthcoming NSF meetings

Time and venue: Our members' meetings are generally held at 7:45pm on the third Wednesday in the month at the NSF meeting room in Weston. However, for the October and November meetings the date has been put back to the fourth Wednesday.

The 26 October meeting will be an opportunity to hear about innovative initiatives in Canberra which have been raised with the help of NSF's 'Sustainability and Health' project undertaken on behalf of Healthpact.

Our 23 November meeting will have a seasonal flavour - at a time of year for family get-togethers, at a time when children are on holidays and when children are indulged - we consider ways to organise our cities so that children can grow up as children. There are many children today who have never climbed a tree, ridden a bicycle or walked to school. Our guest speaker, Paul Tranter, will talk about ways to organise our cities to help children grow up experiencing the richness of outdoor life treasured by most who read these pages. The editor has heard what Paul has to say and this evening will be a treat. We will send further information closer to the time of the meeting as we would welcome non-members as guests.

NSF fee structure 2006

As well as considering the past year's activities and electing a new Management Committee (see page 2), members present accepted a proposal to increase fees from next year as follows:

The fee structure for 2005:

Member category	Fee	GST	Total
Standard membership	\$27.27	\$2.73	\$30
Concession membership ¹	\$13.64	\$1.36	\$15
Corporate membership	\$45.46	\$4.54	\$50
Life membership	\$272.73	\$27.27	\$300

The fee structure for 2006:

Member category	Fee	GST	Total
Standard membership	\$50	\$5	\$55
Concession membership ¹	\$20	\$2	\$22
Corporate membership	\$100	\$10	\$110
Life membership	\$500	\$50	\$550

Suggested member donations ²	Donation	GST	Total	Notes
Giant Petrel	\$36	\$0	\$36	= \$3 month
Galaxias	\$60	\$0	\$60	= \$5 month
Corroboree frog	\$120	\$0	\$120	= \$10 month ³
Tasmanian Devil	\$260	\$0	\$260	= \$5 week ³
Spotted Quoll	\$365	\$0	\$365	= \$1 day ³

¹ Concession for pensioners and students

² Donations are entirely voluntary and support the activities of NSF; they are in addition to membership fees and are tax-deductible

³ These donations could be paid by monthly deductions from credit cards.

Promoting 'healthy people on a healthy planet'

The Australian National Sustainability Complex

Over the years NSF's brainchild, the Australian National Biocentre, has morphed into the Australian National Sustainability Initiative, the ANS Centre. Now, with more functions being added, this is referred to as a Complex or Precinct. The Complex is to provide a showcase for eco-innovative building designs which are well ahead of current best practice; educational spaces and programs; green office buildings rented out to interested organisations; eco-tourism and possibly an eco-village for the accommodation of visiting groups.

Our August meeting featured a power point presentation by Brendan Mackey, Janis Birkeland and David Hood, outlining the development of the idea, its aims and the way it fits into the Griffin Legacy Plan for land use in the Kingston-Jerrabomberra Wetlands area. Brendan and Janis have been very involved in the planning for this complex. David Hood is a new comer with a very important role.

David is the head of the recently formed ACT Chapter of the Green Development Forum. AGDF represents architects, builders, designers, engineers and developers who are keen to produce buildings that are well-designed and sustainable. (David has joined the ANB's board). He spoke to the meeting about the advantages of forming a Public-Private Partnership, with ANB – ANSI in overall control of the design work. There are several developers interested in the project, and funds are being sought to develop an appropriate Business Case.

It will be very exciting when all these plans come to fruition. Thanks to the presenters and others involved in this project for all their hard work.

Without a change in thinking, more tragedies like New Orleans are inevitable ... There is a clear mismatch between forecasting natural disasters at some indeterminate time in the future and the short lifetime of local or national governments in modern democracies. And there are few, if any, votes to be had in raising levees or creating new building codes for earthquake-prone cities.

*New Scientist
10 September 2005*

NSF and the National Council of Women

For a number of years John Harris was the NSF advisor on environmental issues to the ACT Chapter of the National Council of Women. This peak group represents many other groups and has advisors on Health, Nutrition, the Environment, Child and the Family, Youth, Ageing, Sustainable Development and other matters.

Recently, John asked Wendy Rainbird to be the Environment Advisor, while he concentrated on completing his book. Wendy has written reports for NCW on some NSF activities, and has spoken at their meetings. She has responded to their e-mails, for example, about

the recent debate about using nuclear power. Sue Wareham's excellent talk to NSF members provided useful background for an up-to-date response.

It is important to keep in contact with such a peak national group which represents a large constituency. They have been supportive of our efforts.

**Wendy Rainbird
NSF Coordinator**

People and Nature: The Big Picture

Next edition we will feature a review of Stephen Boyden's latest book, *People and Nature: The Big Picture*. A preview of the book is on the NSF website, at the publications link.

Meanwhile we suggest you consider this slim book as a Christmas present. Its language is simple, making it easy for anyone – young people especially – to comprehend the story of life on Earth and to grasp the 'big picture' so enabling the reader to keep the often-disconnected and sensationalised media stories in proportion.

Housing in Africa

Steve Burroughs' talk to the July Members' meeting.

The International Year of Shelter for the Homeless, in 1987, set a goal of providing an adequate home for every family in the world by 2000. In 2005 it is obvious that this goal is slipping further away and cannot be met by most developing countries using current methods.

Indeed in 2003 the United Nations reported that nearly one billion people lived in absolute squalor in slums, and that that number could double in thirty years. Slums house nearly eighty per cent of the urban population in the least developed countries; they lack adequate water, electricity and sanitation services, so disease is rife.

In Steve Burroughs' experience experts who try to solve the problem fail because their western training views the problem from the wrong perspective. In the West it is usual to provide services to blocks of land, build the houses and move the people in. In Africa it is normal for the people to be there first, take a block of land and build a shack on it. If any services are ever provided, they come years later. When the western model is used to build public housing, it tends to suffer from high rates of payment default, lack of maintenance, vandalism and general mismanagement.

The best way to tackle the housing problem is to promote self-help housing or reciprocal aid. The first makes use of participating families' skills, labour and organisational talents, the latter using the cooperation of a group of families in teamwork.

When African countries became independent many Africans thought they would be able to move straight into the houses of their former bosses. This did not happen, but people wanting western-style homes tended to scorn traditional styles and building materials. As Steve Burroughs pointed out in his talk this was very unfortunate as bricks and concrete blocks were a great waste of resources. In his housing projects he worked with indigenous materials, including using waste from various products as stabilisers in earth walls. He found

that women were good workers: the men were too lazy to be useful. When using mud bricks Steve experimented with different size moulds to find a size that women could handle without becoming exhausted.

Along the way Steve had many exciting experiences, and many frustrating ones. AIDS had killed many skilled workers and much trade skill had been lost. Machines broke down: the people using them did not understand the need for different fuels, for maintenance and oiling, or for putting water in radiators. A hippo decided the handle of a machine was a handy back scratcher – until it broke. Formwork for mud walls would disappear overnight.

Through his experience Steve developed his idea for Housing Support Centres, where

people learn building skills, help their peers to build their own homes and teach the next intake of trainees the skills they have learnt.

Materials are evaluated for their best use. Indigenous

building materials such as clay, sand, stone and volcanic ash can be mixed with wastes such as rice husks, fly-ash, petrol by-products, paper pulp and sugar cane and the products tested. Small businesses would be nurtured, manufacturing and distributing building materials and other useful products. Through such mechanisms building suitable homes becomes easier, but they also foster community identification and civic pride, enhancing community functioning.

It is important, too, that houses are seen as works in progress. People may start with only a "core house", maybe a kitchen and toilet, and add to this as needs and opportunity arise, so houses may grow over time.

By these means far more people can be housed satisfactorily than they can be by a top-down housing project. In addition to providing shelter, these cooperative projects go a long way to nurture self-respect and viable communities.

If the ethos of self-help and reciprocal aid becomes generalised in a society, quality of life will improve. [It is] an entry point in the general uplifting of societal conditions.

Jenny Wanless

If we want to change the world we must force our governments to force us to change our behaviour.

George Monbiot

Communities, catchments and conundrums

For the past three years I have been looking at the idea of 'community involvement' in catchment and regional scale environmental planning and management for my PhD studies.

My case study has been the Swan Region, in Western Australia's south west. I have followed it as community groups, local government, NGO's, state government environment agencies and private industry have been through the process of getting accredited with the Natural Heritage Trust (NHT).

This process of accreditation is a necessary step to now obtain NHT and National Action Plan for Salinity money from the Federal Government to do community based, on ground work. It involves developing a management strategy for the region – which issues are going to be tackled, how, and how much it will cost.

An important pillar to this process is the development of 'empowered communities' and devolved decision making responsibilities for, and to, local communities. As such, it provided a fantastic opportunity to examine what it really means of talk of 'community involvement' in this sense.

The first observation to share was that the various 'trajectories' (that is, history, directions, significant people) behind community groups had a big impact on how these groups saw their role in the regional strategy development process. More importantly, these ideas often conflicted with how local government or state environment agency staff saw the role of community groups.

For example, many groups (such as a Landcare group, or a Friends group) might have begun years ago as a political lobby group – to save a piece of bushland for instance. It was common that these groups then changed in purpose to become the long term carers and

managers of such land. When then regional process was underway, these trajectories came into play, because sometimes these past achievements (and worse, the areas that had been saved) did not really rate a mention in the regional scheme of things and so were either subsumed or ignored completely. The result was that some groups felt that this regional process wasn't really for them; this was the community dropping out of a process that was supposed to empower them.

This issue was part of a larger issue which emerged; the idea of 'strategic action'. As is often the case, when it came to the regional process, there was far too much to do and not enough money with which to do it. This was dealt with by the NHT by saying that regions had to prioritise their management approaches

to get the "biggest bang for the buck" as one state manager termed it.

Now, on a regional scale this is very hard to do, and it meant that very different environmental degradation issues ended up competing for attention – and therefore money and resources.

But how do you say whether coastal dune rehabilitation is more important than bush regeneration? Or that tackling water pollution is

more important than wetlands protection?

Much more to the point – how do you possibly quantify an answer?

These were the issues facing the groups in the region – and proving to be a headache for everyone, and with no easy solution. Members were finding that ideas which seemingly go well together in theory – such as conservation of remnant native vegetation and rehabilitation of degraded areas for example – didn't fit together so well when one had to be given priority over the other.

One unfortunate aspect of this kind of situation was that those issues that could be quantified – either with monitoring or visually – won out over those that could not. This meant that some

Modern agriculture is set up to do one thing: produce more. Yet farmers clearly do many other things we value, such as managing the landscape, helping to fix carbon in the soil and preventing flooding. The key to making sustainable agriculture viable is to convince people that farmers should be paid for all the extra things they do. ... Every time we buy food, our choices shape farms and nature and communities somewhere in the world. It's the most political decision we make, and we make it every day.

*New Scientist
17 July 2005*

fantastic work that had gone into environmental education, community awareness raising – things that are difficult to quantify progress on – fell by the wayside. When this happened, and as my field work was drawing to a close, staff members involved in these education programs were no longer being funded, and were leaving – taking their enthusiasm and knowledge with them.

There are many other observations that came from the process. In all though, I think that they are pointing to the fact that ‘community involvement’ is not something that can be handed down from on high. In other words, there is a clear distinction between having a *community-driven process* (in which the results may not be able to be predicted, or even the same as those desired by government bureaucrats) and having *community-level management of the environment* (in which community is invited to be part of a fairly rigid process with a limited number of outcomes).

From my case study I feel that the NHT process was a case of the latter, and wasn’t conducive to creating empowered communities. In talking about the feeling that community people had about this issue, one of my interviewees said:

“If it’s going to work you have to be able to live with chaos, because Friends groups are not going to tow the line and sign on the dotted line. They are what they are because of what they are you know, if people volunteer they don’t have to do it your way! If we wanted effective catchment management or whatever, then we actually have to send someone who’s kind of sensitive, and maybe get away from the economists and we employ anthropologists to come and say ‘well, ok, who are the connectors in this community?’ and then you fund those people to build it, instead of trying to parachute in.”

Rory Eames

Healthy Soils for Australia’s future

Healthy Soils Australia (HSA) is a new national initiative to foster improved soil health. HSA provides a focus for independent scientists, farmers, community groups, industry and policy leaders to advance innovative solutions for protecting and restoring our soils.

Tragically our management of our land and natural resources over the past 200 years has led to the widespread serious degradation of many of our soils and the health of associated water, bio-diversity eco-system services and environmental values.

The decline in the health of our soils has included the degradation of soil structure, soil organic matter levels and associated declines in soil nutrient dynamics and availabilities, water infiltration and holding capacities and of key biological processes and diversity. This degradation is a major factor contributing to salinity and the decline in the productivity, disease resistance, nutritional quality and stress resilience of our dependent agricultural systems.

HSA aims to improve understanding of the causes of this degradation and how it can be

addressed, through practical on the ground action. We need to recognize that our welfare and sustained health of communities depends fundamentally on the health of our soils.

To try to address these challenges, HSA has been active and successful on several fronts.

Partly in response to HSA initiatives, the Government will soon be launching a new *Healthy Soils for Sustainable Farms program* with a budget of \$5M over 4 years. Although soil health had not recently been seen as a major determinant in natural resource management issues, this new program, which closely reflects strategies submitted by HSA, provides

There’s obviously a lot of stress in the way most of us live, and it’s getting worse. People think they can’t live without three cars, two jobs and an hour-and-a-half commute in stop-and-go traffic. We spend most of our waking hours watching television that isn’t even real entertainment but just people screaming at us to buy more things. We literally spend more time charging the batteries of our cell phones and computers than we do talking to our children. And guilt about that drives us to spend ourselves into more debt buying the kids things they don’t need but we’re convinced they must have.

Nicols Fox

*Interviewed about her book
‘Against the machine’*

the opportunity to address both this lack of understanding and practical restorative action.

In partnership with industry and community interests, HSA is also developing strategies for the bio-conversion of organic urban wastes and their return to farms as soil conditioners. Other strategies and actions in the sights of HSA, are practical strategies to:

- improve agricultural outputs, productivity and food security
- improve soil structure and fertility
- minimise salinity and other soil constraints to agriculture
- improve soil water storage and restore the persistence and quality of stream flows
- improve food nutrition and enhance human health
- protect the sustainability of natural resources, including biota
- provide the R&D and innovation to underpin soil health solutions.

The HSA website at www.healthysoils.com.au is new and will increasingly detail these challenges and action that HSA is undertaking to address them. Information will cover HSA strategies and innovations in restoration technologies, mosaic land management practices, biomass and carbon futures, eco-system services, fostering community health, and other research and innovation developments. Interested individuals or industry groups can obtain further information on these initiatives and HSA membership through the website, from info@healthysoils.com.au or from Keith Thomas via the NSF office. HSA has close links to the Nature and Society Forum, Zero Waste Australia and the Sustainability Science Team. The inaugural HSA Chairman is Gerry Gillespie with John Schooneveldt, Rob Gourlay and Brian Tunstall serving as directors.

Rob Gourlay

A million species in a thimble of soil - article

The world has become a significantly more crowded place. Scientists report today that soil teems with around 100 times more species than they had previously thought.

The work at the Los Alamos national laboratory in New Mexico means that a thimbleful of unpolluted soil typically contains at least one million bacterial species, rather than just 10,000. It is impossible to count or even identify that number of species.

The implications were described as "staggering" by Dr Bill Sloan, of the University of Glasgow, and Prof Tom Curtis, of the University of Newcastle, in the journal *Science*.

They argued that new mathematical methods were needed to understand the vast diversity of life on Earth.

The scientists estimate that in a garden with a ton of soil there are about 10,000 trillion single-celled organisms called prokaryotes.

That compares with a mere 100 billion stars in our galaxy, the Milky Way.

"This makes exploring the biodiversity of soil more like astronomy, or *Star Trek*," Dr Sloan said.

The higher estimate has come from a new method of calculating species diversity from soil DNA developed at Los Alamos.

One finding is that toxic metals such as lead kill more of the less abundant species than previously thought. The team compared normal and polluted soils and its results indicate that toxic metals cause a diversity loss of roughly 99 per cent.

From the Daily Telegraph (UK) and the New York Times 30 August 2005

On the next page an explanation of the above article is provided by Walter Jehne, of the Sustainability Science Team.

Yesterday I spoke to a woman who has worked for many years in publishing, who rattled off the names of the agricultural journalists who had been sacked for writing articles promoting local food and small shops. They weren't directly criticising the superstores, but someone was worried that they had strayed off-message ... In the US, Wal-Mart (which owns Asda in the UK) has told Cosmopolitan to remove cover billings about abortion. It has delisted the lad mags Maxim, FHM and Stuff, and banned an album by Sheryl Crow, which criticised Wal-Mart for selling guns.

*George Monbiot
Guardian Weekly 17 May 2005*

A million species in a thimble of soil - why the article is important

The key point is that there may be up to 1000 billion bacterial cells in a gram of healthy, biologically active soil. These may represent a million species or genetically variable ecotypes. However, all of these bacteria are fundamentally dependent on the available substrate to sustain their population levels. It follows that most of the billions of cells will be of species well-adapted to the dominant substrate at that time and place. Most of the others will exist as very low residual and dormant populations as they are starved of substrate. As conventional methods normally detect only high dominant populations the dormant species are often missed.

However, we know they exist for if we add a new substrate, for example a toxin, then we can progressively build up the populations of those bacteria or mixtures of bacteria able to de-toxify that soil by using it as a substrate. These bacteria are generally not new species but simply dormant species whose populations have increased due to the selection advantage provided by a suitable substrate, even if a toxin. We can use such enrichment culture strategies for the bio-remediation of toxic soils breaking down even man-made toxins such as DDT.

Sadly the US Supreme Court has upheld claims by US oil firms that they have patent rights over such selected organisms on the false premiss that they are novel, that is, not part of the natural pre-existing systems. This is further obfuscated by the ability of genetic engineering to incorporate other nonsense genes into that organism so that it is 'patently' novel and defensible in US courts. The reinforcement that soil may naturally contain millions of species of bacteria may help in challenging such claims over 'novel' organisms

putting the onus of proof on the patent claimant that similar genotypes do not occur naturally. These issues are serious as once we allow people to own parts of our natural genetic diversity they can own and commercialise key biological organisms or even processes that protect us from or control diseases or have a critical role in other critical processes in the biosphere.

Windmills

It has been surprising that so many people have opposed wind turbines in their area on environmental grounds. I remember my first sight of a line of windmills along a ridge in New Zealand. I was impressed and delighted. I

thought they were attractive, elegant and just what we need if we are to avert a much uglier future.

Environmental opposition has included objections to their noise, to spoiling the view and to bird and bat kills. On figures presented, the latter objection seems to carry weight. However, it ignores the fact that birds are killed by flying into skyscrapers and even into ordinary house windows. David Suzuki (*New Scientist* 16 April 05) said that each year about 10,000 birds collide with

the tallest skyscraper in Toronto. Mark Diesendorf (*The Canberra Times* 21 Jan 05) wrote that about 3,000 birds were killed on one foggy night in 1982, by flying into the chimneys of a fossil-fuelled power station in Florida. With careful siting in regard to the local flyways the bird kill from a wind farm would be negligible in comparison.

For the other objections, it has to be admitted that beauty is in the eye (or ear) of the beholder (listener). Apparently when windmills were introduced to Holland centuries ago there was an outcry against them. Those who oppose wind farms should consider the alternatives and remember that fossil-fuelled energy kills far more than birds.

Jenny Wanless

The ultimate end to a growth economy is the same as an analogous growth: cancer. But for national economies, the victims are nature, soils, forests, people, water, and quality of life.

There is one, and only one, solution, and we have almost no time to try it. We must turn all our resources to repairing the natural world, and train all our young people to help. They want to; we need to give them this last chance to create forests, soils, clean waters, clean energies, secure communities, stable regions, and to know how to do it from hands-on experience.

*Bill Mollison
Co-founder of Permaculture*

Actions speak louder than words? — behaviour change and sustainability

Arne Naess, Emeritus Professor at the University of Oslo, coined the term “deep ecology”, and explored the notion of an “ecological self” – a “self” that identifies with all living things – rather than a “self” associated with a narrow ego. Similarly, Willis Harman argued in his book *Global Mind Change* that the real action today is about changing fundamental assumptions. This is reflected in part in the trend towards more people “downshifting” their material lives in order to improve their quality of life. It’s also reflected in the research by Paul Ray in the late 1990s identifying the rise of the so-called “cultural creatives”—an emerging cultural group supporting issues such as ecological sustainability, greater self-awareness, the following of spiritual practices such as meditation, holistic health approaches, gender equality, and a social conscience leading to action and work to heal society.

However, do people who have developed such awareness necessarily always behave in a way that is consistent with it? And if this awareness is consistent with sustainability, how might it be facilitated? Of particular relevance to the issue of sustainable behaviours are findings from various social science studies suggesting that environmental consciousness has been shown to account for not more than 10-20% of (mostly) self-reported behaviour. Rather, there seems to be a broad consensus that personal values, situational contexts, deficits in the provision of infrastructure, and financial considerations play a more important role than knowledge, feeling and environmental attitudes. This disconcerting finding is clearly at odds with the claims arising from the presence of an “ecological self”, and has been called the “gap” between environmental consciousness and behaviour.

Consider use of the car, implicated in everything from deaths and injuries from accidents, through to obesity in adults and children, and the global issue of climate change. Typically, utilitarian considerations of time, convenience, the available alternatives, and cost dominate most people’s choices about travel. The convenience of a private car, especially in cities constructed around this form of transport as in Canberra, is in conflict with pro-environmental desires to use more sustainable forms of transport. Even NSF’s *Nature & Society* assumes use of the car in its “where we are” instructions: “Drive around behind the school to the right into Minns Place and into the car park”. Given the timing and availability of buses at night in Canberra, it’s not surprising that it is typical for most people,

except the most environmentally committed, for utilitarian values to prevail over environmental values, in determining their behaviour. The more difficult, time-consuming or costly the behaviour, or if the behaviour is not required or tangibly rewarded, the less the influence of pro-environmental attitudes is on that behaviour being adopted.

Nevertheless,

understanding is an important issue in considering the connection between individual behaviours and the collective ecological and societal costs. A typical model for environmental education usually focuses on factors such as awareness, understanding, values, and taking action. The *understanding* segment of the four-stage environmental education model is significant, as such an understanding influences the potential remedies for problems. It also demonstrates the disadvantages of incorrect perceptions, particularly in terms of public support for broader policies by governments. For example, an extensive study in the 1990s of mental and cultural models of people in the USA, especially in relation to climate change, revealed the common misconception that such change is caused by the hole in the ozone layer. The

One gets the sense that supermarkets are afraid of losing customers if they unilaterally adopt the strategy of charging for plastic carrier bags. I fear that it may be about profits, not choice. After all, if you get someone habituated to a substance – be it polythene or heroin – isn’t it your responsibility to get the person off that substance? It would be unethical to say: “We introduced you to heroin, but now we’re giving you a choice: rehab or more free heroin. The choice is yours”

*The Independent (UK)
26 September 2005*

complex nature of global environmental problems such as global warming underlines the difficulty in achieving adequate individual and social understanding, particularly where the causes and consequences are large in scope and distant across time and space.

On the basis of a broad ecological understanding, people such as Arne Naess and NSF's Stephen Boyden therefore argue for the need for deep changes in policies affecting basic economic, technological and ideological structures. Although understanding is clearly necessary, it may not be sufficient for the facilitation of sustainable behaviours. Even for those who "know better", policy changes appear to be needed to encourage people to follow sustainable behaviours. For example, I found in my research on aviation futures, both from personal experience talking to others over a four year period, and from the research literature reviewed, a generally low public awareness of the ecological impacts of flying. Even where such awareness exists, competing priorities more often than not favour decisions that meet other needs. Thus visiting one's family in another country, attending an international conference, or touring Asia before oil prices make airfares unattractive, all seem to take priority over any ecological ramifications.

A non-judgmental way of gaining more insight into such decisions is provided by the Canadian environmental psychologist Doug McKenzie-Mohr, author of the book *Fostering Sustainable Behavior* (<http://www.cbsm.com/>). His approach exposes the myths associated with behavioural change, as with the assumption that people will change behaviours if they receive information on how and why to change. In contrast, a community-based social marketing approach is based on identifying the perceived benefits and barriers linked to particular behaviours. For example, one might want to use a calico shopping bag rather than a plastic bag, but a barrier to such behaviour might simply be that one forgets to take it.

McKenzie-Mohr's community-based social marketing approach therefore relies on systematically identifying what the perceived barriers and benefits are of potential actions. The goal is to increase the benefits of and decrease the barriers to desirable behaviours, and to decrease the benefits and increase the barriers linked to the competing behaviours. In the case of sustainable transport, for example, one approach is to apply disincentives to using cars e.g. car-free precincts, traffic calming, much higher parking charges, combined with incentives to use high quality public transport e.g. light rail, dedicated busways. To increase the perceived benefits, the latter must address people's needs well e.g. frequency of service, ease of interchange and coordinated timetabling, comfort, safety, reliability and so on.

The biggest political action individuals take each day is deciding what to buy and eat. Preferentially buying local foods that are in season can cut transport and farm energy use and can improve food safety and security. Buying fewer processed, heavily packaged, and frozen foods can cut energy use and marketing costs, and using smaller refrigerators can slash household electricity bills. Eating lower on the food chain can reduce pressure on land, water, and energy supplies.

Danielle Murray, Earth Policy Institute

Ultimately, the question of whether our society can sustain itself needs to be contrasted with the difficulties of "educating" people, at least in the short term. As Lester Milbrath put it in his book *Envisioning a Sustainable Society: Learning our Way Out*: "Climate change is likely to be the most insistent and persistent teacher". Behaviourist approaches clearly have

an important role to play. However, only when broader policies and institutional practices support individual people in following sustainable behaviours, are the necessary and sufficient conditions for behavioural change likely to be met. For example, Israel made the use of solar hot water heaters mandatory, so that this practice is now universal in that country. Similarly, Prof. Andrew Blakers at the ANU suggests that the mass retrofitting of buildings is the only way in which rapid reductions in greenhouse gas emissions can be achieved in the building sector.

In the early 90s, Al Gore (US Vice President from 1993 to 2001) in his book *Earth in the Balance* proposed a Global "Marshall Plan" for facilitating the transition to a sustainable world. It included five broad strategic goals: stabilising world population, the rapid development of

environmentally appropriate technologies, a comprehensive change in the economic “rules of the road”, a new generation of international agreements, and a plan for educating the world’s citizens about the global environment. Backed by a rising public awareness of the ecological crisis, and a set of policies and practices flowing out of these broad goals, Gore reflects on how the original Marshall Plan enjoyed strong bipartisan support at the time. Further he quotes one of Marshall’s former colleagues, General Omar Bradley, who said: “It is time we steered by the stars, not by the lights of each passing ship”.

Murray May

As is usual Murray provides us here with food for thought and deals with a dilemma we have all pondered some time; it may even be one which haunts us frequently. We invite reader’s letters or comments for publication in the December ‘Summer reading’ edition of Nature and Society.

Daedalus symbolises an evil of our age: the high-flying technician who puts his talent at the disposal of ideologies without bothering about their meaning and values.

François Jacob: La Souris, La Mouche et L’Homme

Futures Forums

After two trials with groups of students and senior citizens, the first of NSF’s Futures Forums was held on 11 October 2005. The Forums are a vital stage of the People and Nature (PAN) Program. They proceed on the PAN assumption that raising the levels of community understanding and exchange of ideas among interested community groups is a prerequisite for the achievement of ecological sustainability.

The first round of Futures Forums is focused on *People and Nature: The Big Picture*, a layperson’s handbook prepared by Stephen Boyden and published by NSF this year. The text covers the processes of life, the human place in nature, cultural capacity and the ecological and health issues facing our society today. It is rich and succinct in conceptual diagrams, summaries, a glossary and tables of environmental issues and human health needs.

The distinctive perspective is the biology of civilization - historical, contemporary and prospective - hence the use of “futures.” Participants in the forums are given copies of the handbook and a questionnaire designed to elicit reactions, shifts in views and ideas for individual and collective actions. The final chapter of the book is about “the future: imperatives and opportunities.”

Each forum meets at least twice in order to digest the handbook, mull over the initial conversations and consider the significance of *The Big Picture* and its practical implications. It is envisaged that the project will yield a model for learning and democratic participation that could be replicated nationally.

The first of the Canberra community groups are 32 members of the University of the Third Age Current Affairs Discussion Group. The preliminary discussions at the first meeting were intense, leading to lively anticipation of the next meeting on 8 November. The questionnaire includes the topic of a future sustainable Canberra, which was already a preferred focus at the first meeting, as well as recommendations for actions in other spheres or by specific sectors.

Other participating groups being approached include residents associations, planners, school students, youth, women’s groups, conservationists, political parties, property owners and developers and the financial and management sectors. After the phases of information, discourse and proposals for action, members of the different groups will be invited to gather together at an ACT Futures Symposium, which

will be open to the public, to discuss the outcomes of their deliberations.

Groups participating in the project will also be provided with a handbook entitled *Ecological Issues in a Nutshell*. This book summarises the important ecological issues facing our society today, indicates significant underlying causes and outlines current societal responses. It is due to be published shortly as an integral part of the PAN Program and will provide a basis for periodic *EcoBulletins* that update the information and analysis and more specific *Eco-inform* pamphlets.

NSF will record and collate the responses of the various groups and the Symposium. The results will be widely publicized in the media and on NSF’s website and furnish resources for futures forums in other centres and for the Sustainability Network associated with the Australian National Sustainability Initiative.

Participants in the project will be encouraged to engage in diverse follow-up activities of their own that will contribute to the debates and policy developments relevant to the ACT’s and federal moves towards ecological sustainability. The project will need to be monitored and evaluated with respect to its objectives, practical outcomes and replication elsewhere.

Brett Odgers

Krishnamurti for today

Jiddu Krishnamurti (12 May 1895-17 February 1986), was discovered for the West as a teenager by C.W. Leadbeater in India on the private beach at the Theosophical headquarters at Adyar in Chennai. He was subsequently raised by Annie Besant and Leadbeater within the world-wide organization of the Theosophical Society, who believed him to be a vehicle for a prophesied World Teacher. As a young man, he disavowed this destiny and also dissolved the Order established to support it, and eventually spent the rest of his life travelling the world as an independent speaker and educator on the workings of the human mind. Age 90, he addressed the United Nations on the subject of peace and awareness, and was awarded the 1984 UN Peace Medal. He gave his last talk a month before his death, in January 1986, in India where he had been born.

Krishnamurti's critique of authority as a hindrance to free enquiry is well-known. His critique of the *flight from disturbance* as a major hindrance to free enquiry, is considerably more subtle and probably less widely recognised. In

Krishnamurti's view, all walls, even 'soft walls', hinder free enquiry and every individual must ultimately choose between *comfort* and *awareness*. Or as he sometimes put it, one must choose between *security* and *truth*.

In his writings and public talks, he consistently sounded a steadfast warning to beware of those who offer *comfort* – 'a snare in which you are caught like a fish in a net'. This is one of many vivid metaphors he used to convey the urgency of facing reality in a more robust and vigorous frame of mind, in order to cast off the straggling snares of religion, nationalism and all other forms of ideological escapism. From early in his life till his final days, he counselled against putting up 'Please do not disturb' signs when the house we are living in is burning.

Here are two quotations from Krishnamurti's writings which are relevant to the cultural and environmental problems facing us today.

October - November 2005

The moment you follow someone you cease to follow Truth. I am not concerned whether you pay attention to what I say or not. I want to do a certain thing in the world and I am going to do it with unwavering concentration. I am concerning myself with only one essential thing: to help set man free. I desire to free him from all cages, from all fears, and not to found religions, new sects, not to establish new theories and new philosophies. If an organization be created for this purpose, it becomes a crutch, a weakness, a bondage and must cripple the individual, and prevent him from growing, from establishing his uniqueness, which lies in the discovery for himself of that absolute, unconditioned truth.

J Krishnamurti, *Think on These Things* (1964)

"The internet is just another medium of communication", more than one leading CEO has been quoted as saying, ignoring stark evidence that if nothing else, the internet has instilled an expectation of instant gratification among consumers which has redefined every aspect of business ... more than just a "medium of communication", or of information, transaction and entertainment, it's the foundation of a new economic, social and political order.

*Creed O'Hanlon,
Australian Financial Review
30 September 2005*

If you deny every form of clinging to something that will give you comfort, not knowing where it is going to lead you in that state of uncertainty, in that state of danger, that is denial. In this search for contentment, comfort, your thoughts and feelings become shallow, barren, trivial, and life becomes an empty shell. The human mind is lethargic; it has been so dulled by authority, so shaped, controlled,

conditioned, that it cannot stand by itself. But to stand by oneself is the only way to understand truth. Are you really, fundamentally interested in understanding truth? No, most of you are not. You are only interested in supporting the system that you now hold, in finding substitutes, in seeking comfort and security; and in that search you are exploiting others and being exploited yourselves. In that there is no happiness, no richness, no fullness.

J Krishnamurti, *Be Disturbed for the Rest of Your Life* (1962)

Book reviews wanted

Have you read any good books on Nature and Society themes lately? If so we would welcome reviews to be published in these pages in future.

Clingfilm exudes gender-bending phthalates

Scientists in America have found the first evidence that common chemicals used in products as diverse as cosmetics, toys, clingfilm and plastic bags may harm the development of unborn baby boys.

Researchers have long known that high levels of substances called phthalates have gender-bending effects on male animals, making them more feminine and leading to poor sperm quality and infertility. The new study suggests that even normal levels of phthalates, which are ubiquitous, can disrupt the development of male babies' reproductive organs.

Several types of phthalates, which are used to make plastics more pliable, and have been around for more than fifty years, have been banned, but many are still produced in vast quantities.

Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it's the only thing that ever has.

Margaret Mead

Tests showed that women with higher levels of four different phthalates were more likely to have baby boys with a range of conditions, from smaller penises and undescended testicles to a shorter perineum, the distance between the genitals and the anus. The differences, say the authors, indicate a feminisation of the boys similar to that seen in animals exposed to the chemicals.

One way that phthalates get into the bloodstream is when they seep into food from plastic packaging.

Andreas Kortenkamp, an expert in environmental pollutants at the School of Pharmacy in London, said: "If it's true, it's sensational. This is the first time anyone's shown this effect in humans. It's an indicator that something's gone seriously wrong with development in the womb and that's why it's so serious. These are mass chemicals. They are used in any plastic that is pliable, whether it's clingfilm, kidney dialysis tubes, blood bags or toys. Sorting this out is going to be an interesting challenge for industry as well as society."

Gwynne Lyons, toxics adviser to the WWF, said: "...Right now the government is looking at how the regulation of hormone disrupting chemicals could be made more effective under

new EU chemicals law, but the chemicals industry is lobbying very hard to water down this legislation.

There is little point in fretting whether tomatoes are fresh or organic when even grass-fed meat and game meat may be polluted with phthalates. If this report is correct, it looks as if we can say that *any* meat wrapped in clingfilm is, by that very fact, potentially contaminated with phthalates.

From The Guardian (UK) 27 May 2005

A cautionary tale

Centuries ago the cod fishing in the north Atlantic was the most bountiful fishery in the world. Then came modern trawlers. The Canadian fishery was closed in 1993, to

enable the cod to replenish their stocks. They have not done so. Forty years of data collected from the continental shelf reveals

why.

As the cod collapsed, their favourite prey – crab, shrimp and small fish, such as herring – increased. These eat larger zooplankton, which in turn declined, allowing algal phytoplankton to increase. The algae consumed more of the nitrates dissolved in sea water: the whole food chain had changed right down to the dissolved nutrients in the system.

Why haven't the cod recovered? It is possible that with so few cod around, the fish find it hard to mate. But maybe it is because cod larvae are themselves large zooplankton and they are now eaten by the large number of shrimps and small fish.

By almost removing one level of the marine ecosystem, the whole system has changed and the niche formerly occupied by the cod has disappeared. Maybe a similar effect is at work in the case of the great whales which have not recovered, despite the moratorium since 1986.

It is difficult to gauge just what effects such large scale human interference in natural systems will have. Indirect effects are likely to surprise us

New Scientist, 18 June 2005

Farrago

Blocking malaria (1)

Plants produce an enzyme *pantothenate synthetase* that enables them to synthesise pantothenate (vitamin B5), a vital vitamin. Dr Kellie Tuck of Monash University's School of Chemistry is working on ways to block this pathway, which is present in plants, fungi and the bacteria that cause tuberculosis, but not present in animals.

If the pantothenate pathway can be blocked it would allow the development of novel herbicides that cannot harm animals. It would also open up a new method of preventing tuberculosis, and a potential way of destroying the malaria parasite.

Australasian Science August 2005

Fortifying Bananas

Uganda's staple crop is bananas. Each person eats about a kilogram, six to ten of their local cooking bananas, each day. This leads to vitamin and mineral deficiencies. All bananas are a poor

source of iron, and the East African Highland banana, the local variety, is also poor in beta-carotene. As the soil is low in iodine, that mineral is lacking, also.

Over the last year a team (lead by Professor James Dale) at the Queensland University of Technology has been working on a project to remedy these deficiencies. Now they have received a funding boost, a grant of nearly one and a half million dollars from the Grand Challenges in Global Health initiative.

Genetic technology will be used, as East African Highland bananas are sterile. The team will look for suitable genes in other varieties of bananas. Beta-carotene should not be too difficult as some varieties produce high levels of this vitamin precursor, but no bananas accumulate much iron.

Australasian Science May 2005

Glasses for the masses

There could be about a billion people in the world who need fairly simple vision correction but who do not get it because they are too poor or there are no optometrists. Some countries

in sub-Saharan Africa have only one optometrist for one million people; in Mali the ratio is one to eight million.

Atomic physicist Joshua Silver of Oxford University was playing around with adjustable lenses when he found he could correct his own myopia. Now he is hoping to manufacture glasses cheaply enough for these millions to use. The lens is a fluid-filled chamber made of a thin, clear plastic membrane. The curvature of the lens depends on the amount of fluid, which is controlled by a removable syringe. The user tests each eye separately, while looking at a chart, or the leaves on a tree, etc. Starting with too much fluid in the lens, the user slowly withdraws fluid until the image is sharp. The syringe is then thrown away.

Silver's company, Adaptive Eyecare, has a production line in China. Ten thousand pairs of the new spectacles have been given out to an adult literacy program in Ghana.

New Scientist 20 Aug 2005

When people are educated to the links between environment and government, they can improve both. Through civic and environmental education programs, they lose their apathy and become involved.

*Wangari Maathai
in National Geographic Magazine
September 2005*

Blocking malaria (2)

A naturally occurring bacterium, *Wolbachia*, that passes from one generation of mosquito to the next, can halve the adult mosquito's lifespan. The malaria parasite and the dengue fever virus both need an incubation period within the host mosquito, so shortening the host's lifespan should greatly reduce the rate of transmission of these diseases.

The Bill and Melinda Gates Foundation is funding research at the University of Queensland into this potential method of control. The project could provide a cost-effective and self-perpetuating way to reduce the incidence of these diseases, or even eliminate them. The research will start with dengue fever, as its carrier *Aedes aegypti* naturally harbours these bacteria, unlike the carriers of malaria.

Wolbachia has proved that it can successfully invade mosquito populations despite selection pressures against it. Matings between infected males and uninfected females are sterile, but infected females successfully reproduce with any male, producing infected offspring.

Australasian Science August 2005



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