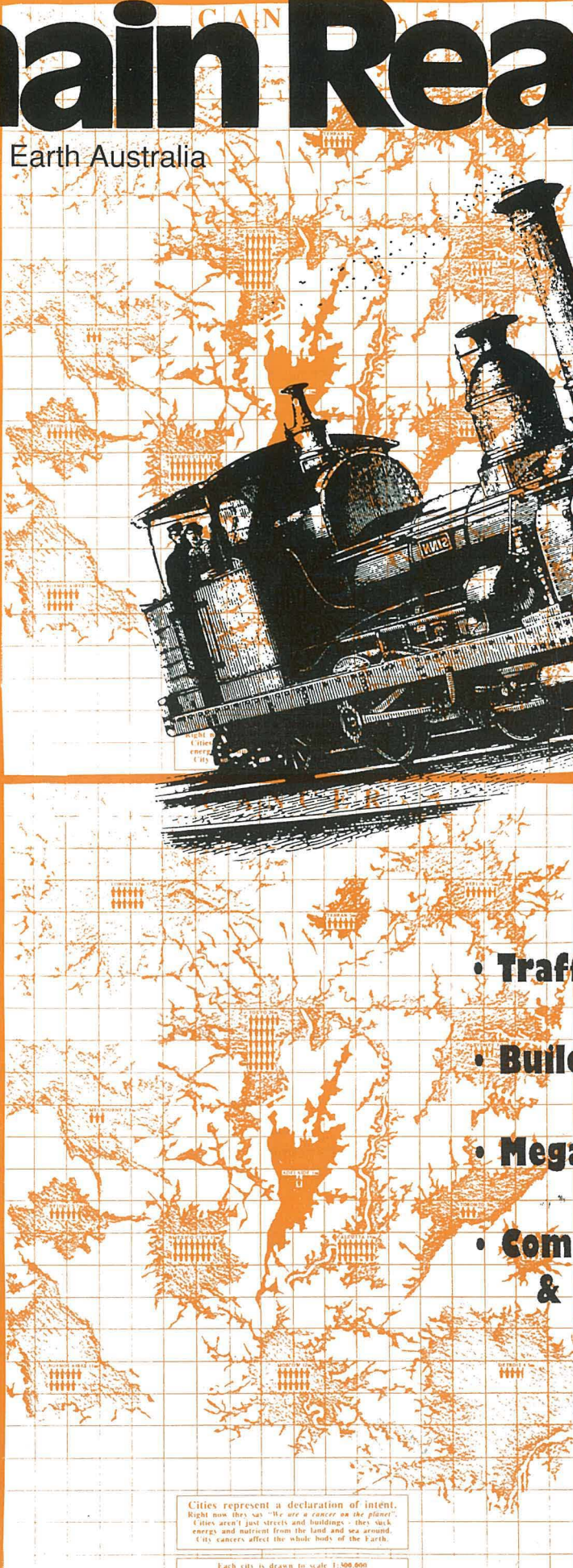


Chain Reaction

Friends of the Earth Australia

Number 66 \$3.00



- **Traffic, Transport & Chaos**
- **Building the Green City**
- **MegaCities in Crisis**
- **Communities & Neighbourhoods**

Cities represent a declaration of intent. Right now they say "We are a cancer on the planet". Cities aren't just streets and buildings - they suck energy and nutrient from the land and sea around. City cancers affect the whole body of the Earth.

Each city is drawn to scale 1:500,000

**Sneak Preview:
EcoCity 2 • April 16-19**

SUBSCRIBE!

DON'T MISS OUT!

To make sure you get all your **Chain Reactions**, post this form today to **Chain Reaction**, GPO Box 90, Adelaide 5000

One Year (4 Issues)

- \$12.00
- \$9.00 Concession

Two Years (8 Issues)

- \$21.00
- \$17.00 Concession

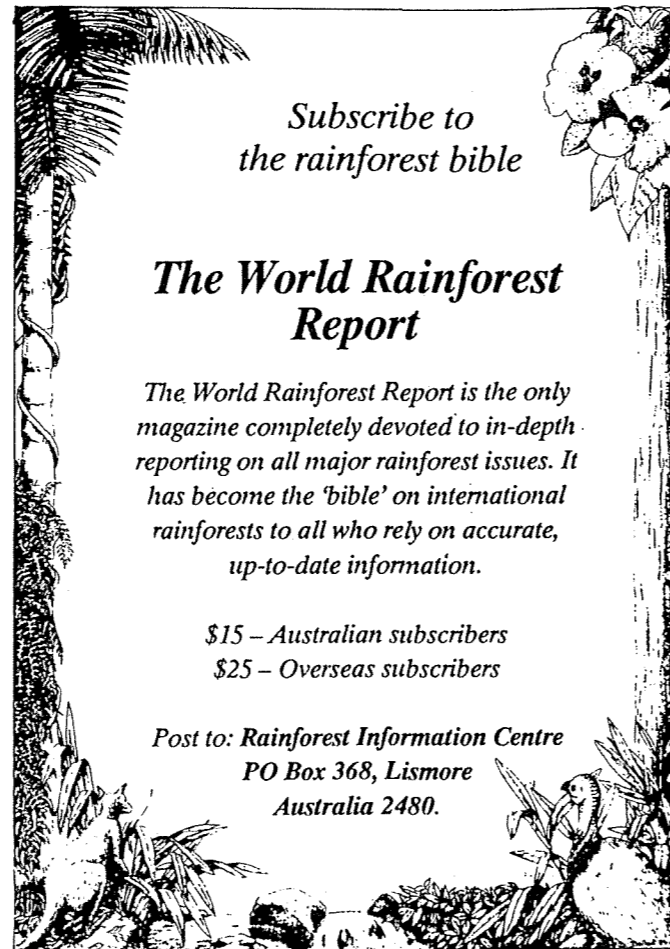
Name

Address

.....Postcode

Date

Please make cheques payable to Chain Reaction Co-op Ltd.



*Subscribe to
the rainforest bible*

The World Rainforest Report

The World Rainforest Report is the only magazine completely devoted to in-depth reporting on all major rainforest issues. It has become the 'bible' on international rainforests to all who rely on accurate, up-to-date information.

\$15 - Australian subscribers
\$25 - Overseas subscribers

Post to: Rainforest Information Centre
PO Box 368, Lismore
Australia 2480.

PERMA culture
INTERNATIONAL JOURNAL

*be informed -
subscribe now*

**The world is full of problems -
this journal is full of solutions**

Each Permaculture International Journal gives 52 pages full of practical tips, inspiring articles, details of Permaculture courses and events, news and stories from the forefront of sustainable development.

**edible landscapes • appropriate technology
• sustainable agriculture • village development
• earthbank and ethical enterprise**

Subscriptions: 1 year (4 issues) @\$15 2 years @\$30
 Life membership @\$300

Send to: PERMACULTURE INTERNATIONAL
PO BOX 7185 LISMORE HEIGHTS NSW 2480 AUSTRALIA

Chain Reaction

Number 66 April 1992

- 16 **In search of ecocities**
The ecocity movement has developed from a number of strands writes *Roman Orszanski* who sets out a context for current discussions.
- 17 **From grey to green**
How do we make our cities into ecocities? *Peter Berg* suggests that we apply bioregional principles to a green city program.
- 20 **Design 'n' weather**
The weather can be a design feature of buildings says *Emilis Prelgauskas*.
- 22 **Chairs in the street**
David Engwicht looks at chairs and sees an essential role for chaos in building a sustainable city.
- 25 **Crisis in the megacities: Bangkok**
Larger cities such as Bangkok face larger problems. *Charles Setchell* looks at the hub of the world's fastest growing national economy.
- 28 **Sustainable society: a radical view**
A dark green *Ted Trainer* suggests that the limits to growth argument hasn't been refuted and it implies drastic change.
- 32 **Pulling figures out of the air**
Transport greenhouse gas emissions are calculated by *Dhanu River* and *Jeff Kenworthy*.
- 34 **Cities addicted to cars**
There are ways to reduce the dependency of cities on cars says *Peter Newman*.
- 41 **Clean and healthy ... dirty and happy**
Planners and designers can help bring about environmental and social change according to *Randolph Hester* and *Laura Lawson*.

letters	2
Hello Again Flower	3
earth news	7
greenword	12
FOE news	13
reviews	41
resources	46

Publisher: Friends of the Earth, Chain Reaction Co-op. Ltd, GPO Box 90, Adelaide, SA, 5001 **Editors:** Clare Henderson and Larry O'Loughlin **Guest editors:** FOE Nouveau **Front and rear covers:** Artwork by Roman Orszanski and Phil Bradley, printed by Andrew McHugh on the Empire Times Press **Reprographics:** Andrew McHugh, Simon Healey, Cadillac Color Web. **Printing:** Cadillac Color Web **Paper:** Reright 80 gsm (100 per cent recycled, non-de-inked) **Ink:** Soya bean-based

Correspondence: Chain Reaction, GPO Box 90, Adelaide, SA, 5001
Phone and facsimile: (08) 293 8535 **E-mail on Pegasus:** peg:chain

Registered as a periodical category 'B' by Australia Post No VBQ 2034

Written material in Chain Reaction is free of copyright unless otherwise indicated, or where material has been reprinted from another source. Please indicate your source if you reprint. Permission to use graphical material should be sought from the artist. Chain Reaction is indexed in the Alternative Press Index. The opinions expressed in Chain Reaction are not necessarily those of the publisher or any Friends of the Earth group. ISSN 0312-1372. Recommended retail price \$3.00.



Letters

AIDEX protest a victory

We are writing in response to Louise MacDonald's article 'How was AIDEX' (*Chain Reaction* 65). It is great that Louise admits the blockading of AIDEX was a success, 'the impact of the demonstration was that AIDEX will probably not be held again in Canberra and Australia's involvement in militarism was put on the agenda in the media and in the minds of the public'. Why then is there all this petty griping after the event?

Louise insults many of the protesters at AIDEX by saying that they were manipulated by the International Socialist Organisation (ISO). The mass of people at AIDEX came with the intention of shutting it down and were prepared to stand up to police violence to achieve that. Give them the credibility they deserve.

Louise claims the protest lost the initiative,

You are invited to write letters to **Chain Reaction** with your comments on the magazine or any other issues of interest.

Send to: **Chain Reaction**
GPO Box 90, Adelaide, South Australia, 5001
Fax: (08) 293 8535

becoming a televised battle with the police instead of a protest against AIDEX. But what does she suggest as an alternative? The overwhelming majority decided at camp meetings to continue blockading the gates. The only way battles with the police could have been avoided would have been to retreat from this effective strategy.

Then the protest would not have been the success Louise admits it was. By almost closing AIDEX down, it received much more publicity and discussion of the issues than if we had allowed the show to proceed with us making a purely moral, but peaceful, statement of protest.

Louise makes it sound as if the ISO was a well oiled, semi-secret machine. It is laughable - ISO members often argued openly and publicly against each other over what to do next. Our caucuses were always held in the open and many non-members joined in.

Louise's solution of affinity groups does not answer the question of what strategies and tactics affinity groups could have come up with which would have been just as effective as the blockade while avoiding police attack.

This is the question which detractors of the AIDEX protest have to answer if they want to seriously suggest there was

a problem at the camp.

The accusation that the ISO attacked the women's day of action because it was 'divisive, cowardly and irrelevant' is wrong. We think it is fantastic to have a women's action, our objection was political.

The main activities were praying, keening, dancing and weaving. This promoted women as being peace-loving, earthy, emotional and passive - the same old stereotypes which the women's movement rejected twenty years ago. It fed right into the sexism of the camp which said women shouldn't be on the frontlines because it might get violent.

AIDEX was the greatest victory for the Left in a decade, that is why sections of the media tried to discredit it as simply a riot of disreputable hooligans. We expect this from them, but would expect better from those who supported the protest. There were differences of opinion at the camp, which were argued out at many meetings. But now those disagreements are not central.

The courage, enthusiasm and determination of people at the protest are what mattered. This is the lifeblood needed to rebuild a Left capable of giving a lead in resisting the horrors of the so-called New World Order. That is why it is worth defending the AIDEX protest, not denigrating the participants as if they were manipulated into misguided actions.

*Penny McDonald and
Sandra Bloodworth
International Socialist
Organisation, Melbourne*

Protest presents challenge

Having participated in the AIDEX protest we have since had discussions about the perceived protester and police violence that has alarmed so many in the peace movement and the wider public.

As was made much of by the media, some protesters were acting or, more commonly, speaking aggressively towards the police. For some this resulted from their ideological beliefs, others said they were acting out of self-defence, whilst others were so angered by the excessive violence used on themselves and their friends that they changed their attitude.

We personally felt the extent of confrontation that developed between the protesters and the police not only fuelled the media's presentation of the 'whole group', but also moved the focus of the wider public onto AIDEX to some extent.

We believe that dialoguing with the police is important - that some do come to recognise something of the connections and injustices as we see them.

Many of us who went to Canberra believe the protest was a success. But there were negatives as well and we personally have felt challenged to look at the differences in strategies and tactics used in the protest.

We want to emphasize that there were many non-violent actions not shown by the mass media, and we cannot underline enough not to take mass media presentations at face value. They will always present protesters in

such a way that the public is put off side. The worst violence was that represented by AIDEX itself, and any protester aggression was not a mark on that shown by the police.

Our hope is that both ourselves and others who are opposed to Australia's trade in death and destruction might learn what we can from Canberra and get on with the task of breaking down the power of those who gain wealth through the arms trade in our backyard as well as overseas, and building a more just, peaceful home for us all.

*Shelly Houghton and
Rhodes Hart, Queensland*

Public transport

One important issue that seems to be left to the train and bus spotters amongst us is the fight to retain our right to mobility through effective, clean and green public transport systems. In several States these are currently under attack from governments blinded by oil producers, car manufacturers and road lobbyists who are attempting to roll back the clock.

The latest move by car industry moguls and motor lobbying groups is to suggest that greenhouse is the only serious problem created by the car. In an effort to cleanse their collec-

tive environmental conscience they suggest we can save the world by rushing out and buying a sparkling new fuel efficient, emission limited car.

Other than the lack of cash needed for such a purchase amongst a large section of the community, the obvious flaws in this argument need to be highlighted:

- the highest selling models in Australia remain the fuel guzzling Concomore and the Fuelcon.
- the resources consumed in producing each individual car would probably keep a village in the developing world going for several years.

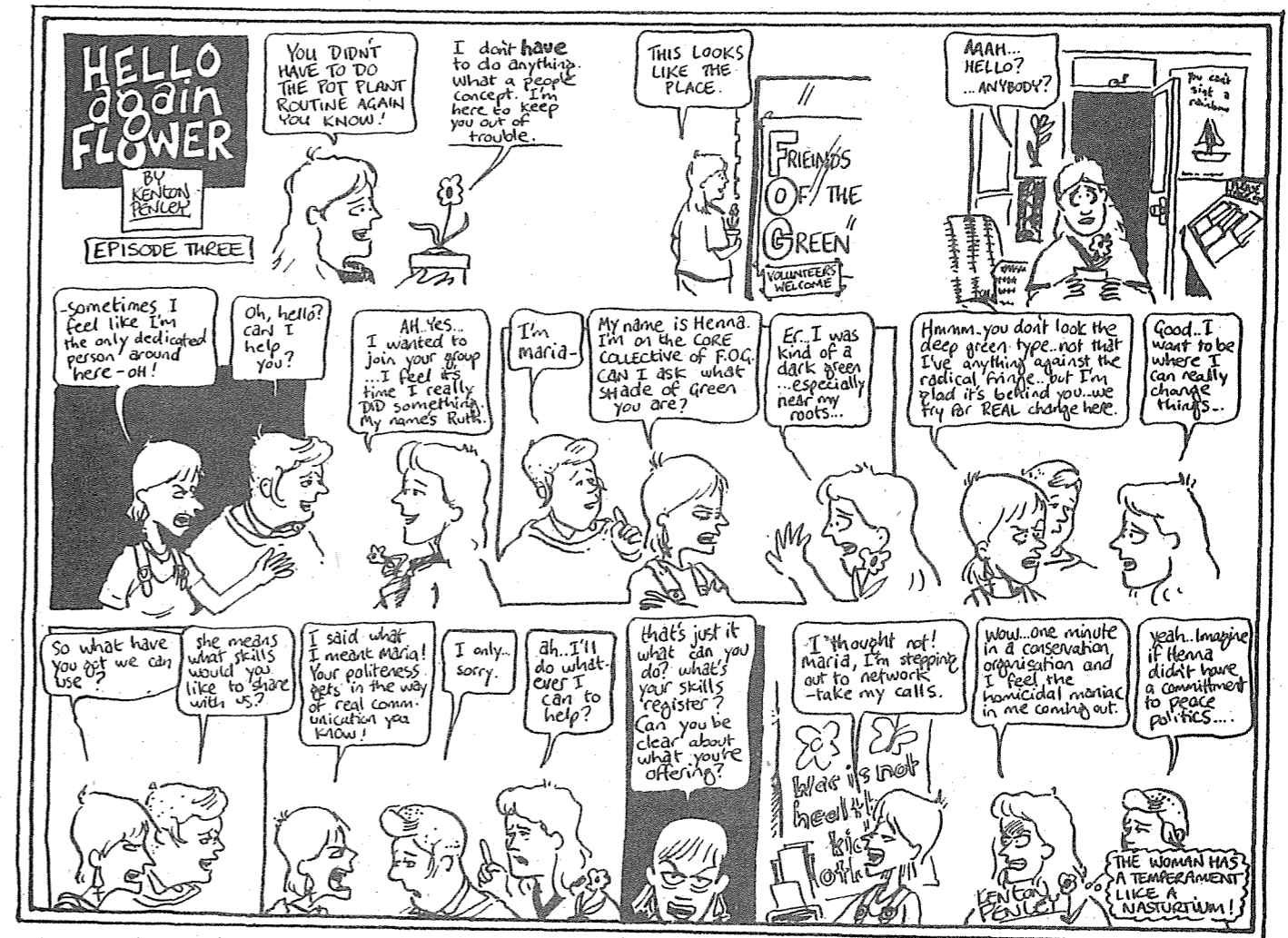
- up to 40 per cent of urban land space is devoted to the car.
- road accidents and trauma cost Australia \$6 billion per annum.

It should be recognised that one of our basic rights, alongside those of adequate health care, housing and education, is the right to mobility.

The fact that this right is currently under threat needs more consideration in the pages of such an august journal as yours.

Yours, on the 8.20 from Outer Harbour,

*Mark Carter
Croydon, South Australia.*



Letters

From the war zone

Just a brief report from the 'Top End'. The local media coverage of territory politics reminds me of my old Holden - it was white with square wheels, expensive to run and always breaking down.

Recently I ventured into the 'War Zone'. Sorry, I forgot to explain, we're in the middle of a war out here and every responsible person has been asked to look out for suspicious characters and, frankly, it has got me quite worried about our defence capabilities. Every time a suspicious looking public servant has landed at our small bush outpost I've done the right thing and reported it to the allies, but - you know what? - the bastards are still getting through.

We flew into Jabiru last week in a plane chartered from the mission air fellowship (MAF). Their policy refuses to allow passengers to carry alcohol or cigarettes, let alone submachine guns, but sure enough when we landed, out trot two soldiers with impressive looking guns complete with regulation red corks stuck in the barrel (and you think I'm joking!). Whilst they checked us out another group watched us with binoculars.

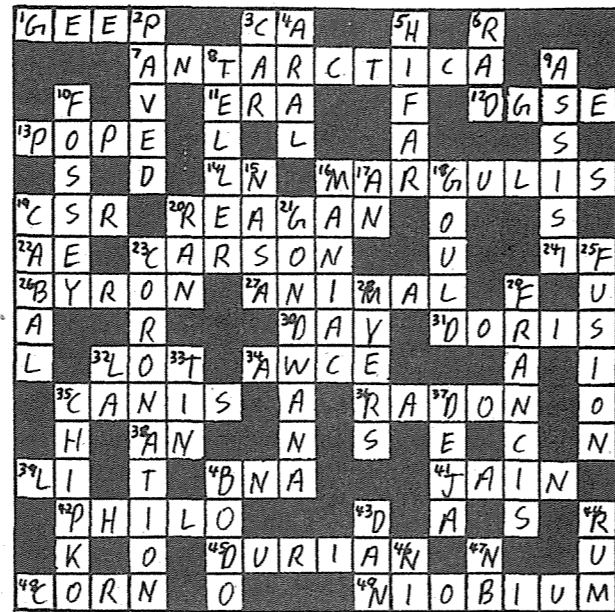
By the time we reached Darwin, the military activity increased to such an extent, it was starting to feel more like the 'twilight zone' with multitudes of soldiers, vehicles and HQs surrounded in coils of barbed wire.

It completely transformed the enjoyable experience of fresh Asian food at the markets on Sunday morning. The combination of the hot tropical weather mixed with the aromas of fresh paw paw, coconuts, spicy cooking and friendly Asian stall owners.

There I was ordering my fresh paw paw salad, it was being made by an old Asian woman. While I stood and watched her pounding away in her mixing bowl we were suddenly disturbed by the slow 'thud, thud, thud' of a squadron of military helicopters buzzing overhead followed by two Caribou aircraft slowly drifting by. She looked up and so did I, then we looked at each other. Whilst it left me wondering if Robyn Williams was about to make an appearance, I hate to think what it left this old woman thinking.

Well there's not much else to report ... I'm hearing a little bit of gossip about Renison and sandmining on the Tiwi Islands ... I recently flew over Narbarlek and saw what appeared to be a breach of their tailings dam. Unfortunately I didn't have a camera with me, maybe next week.

Jon Lark, Gunbalanya,
Northern Territory.



Greenword solution 65

Peter Watkins'

The Journey

A mini film series for peace made with international public support by the maker of *The War Game*

Now available on video

It is about war and its causes ... media manipulation ... world hunger ... racism ... and sexism

The Journey provides the basis for strong community discussions

See and show *The Journey* at your:

local cinema ● church group ● school ● service group ● film society ● continuing education course ● peace group ● scientific or media conference ● home ● environmental group
It is a rare experience to view such important and stimulating footage on a television screen.

The Journey is available on six VHS video cassettes: rental \$75.

For details contact:

Watkins Film Foundation,
25 Barkly Street, North Fitzroy, Victoria, 3068
(03) 486 1384

REBEL WITHOUT A CAUSE?



EVERY NUCLEAR FAMILY
NEEDS A CHAIN REACTION

Fun Things For The Kids, Too

SUBSCRIBE

Chain Reaction is the national magazine of Friends of the Earth Australia. Since its establishment in 1975, it has covered a broad range of issues relating to the environment and has provided a resource for all those concerned to know the stories and issues ignored or hidden in other media. The best way to receive *Chain Reaction* is through a subscription.

Return the completed form below, and keep in touch.

Post today to:
Chain Reaction, GPO Box 90, Adelaide, SA, 5001

Four issues \$12 / \$9 concession

Eight issues - \$21 / \$17 concession

Name

Address

Postcode

Green LEFT weekly

It's new.
It's indispensable.
It's yours.

Green Left Weekly is the new national newspaper initiated by a broad range of activists, groups and left journalists. A real alternative to the commercial media, it provides the information, news, analysis and debates needed by every progressive movement and individual.

Buy a share and be part of this exciting new venture. Don't miss an issue - subscribe now!

BROAD, PROGRESSIVE & ACCESSIBLE

I want to buy _____ shares at \$50 each. Please find enclosed \$ _____.

Subscription: \$100 for 2 years (88 issues) \$25 for 6 months (22 issues)
 \$50 for 1 year (44 issues) \$15 for 12 issues

Name Address

..... P/code

Return to P.O. Box 394, Broadway N.S.W. 2007.

Backstage

THIS ISSUE was produced with FOE Nouveau as guest editors. FOE Nouveau proposed the idea at the January 1992 FOE Australia meeting which approved an arrangement between the editors and FOE Nouveau.

FOE Nouveau wanted to do an issue on themes addressed by the Ecocity 2 conference to be held April 1992 in Adelaide. The group undertook to collect material and prepare artwork for 25 pages of articles and Resources and the outside cover.

The FOE Nouveau group consisted of Roman Orszanski, Jonathon

Goodfield, Phil Bradley, Lynden Jillings and Damien Warman.

We did Earth News, FOE pages, Reviews and the rest, cleaned up some bits and pieces and did liaison with the printers.

There will also be guest editors in October 1992 with Brian Martin and Sharon Beder from the Department of Science and Technology Studies at the University of Wollongong.

The next issue of *Chain Reaction* will be out in July. We already have material and ideas, but we still encourage people to send material, even though we receive more than we print.

We are establishing a system to tell people we have received their contribution and then whether we will use it or not. This is not a simple process, as content depends on a range of factors, such as other content. We apologise to those who have previously contributed, but not heard from us. This is hopefully a thing of the past!

We especially appreciate contribu-

tions of graphic material such as photographs or line drawings. We like to use new or original material as we then often see it printed in other journals, and usually both the artist and the magazine are credited.

We also like graphics which do not reinforce existing biases. An example is the graphic on page 7 in which all the cyclists are men. It was the best available when we went to press, but we would like to be able to have a better choice.

Women contributors to the magazine are particularly encouraged because the ratio of male to female authors sometimes creeps up.

This issue has a Greenword, but we didn't ask Phil Shannon to do it on such short notice. We thought we'd just whip one up, but it's harder than it looks. The impromptu collective had fun, but wondered whether anybody does the Greenwords.

Clare and Larry
Editors

Earth News

Transnational corporations hijack earth summit

Transnational corporations (TNCs), responsible for many of the world's environmental crises, have remained noticeably absent from the agenda of the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit.

The environmental groups Greenpeace, Third World Network and National Toxics Campaign, at a press conference in New York on 16 March 1992, called on UNCED to acknowledge TNCs as a major contributor to global environmental problems. The groups demanded that TNCs be held accountable in the Earth Summit process and beyond.

The environmentalists pointed out that the draft of 'Agenda 21', the action plan that heads of state are to sign in Rio de Janeiro in June, places its faith in voluntary, unenforceable initiatives that appear to be generated by the business sector itself.

'By writing their own ticket, transnationals are hijacking the Earth Summit process, undermining our best chance for protecting

the planet and all those living on it', said Greenpeace's Kenny Bruno. 'History has shown that there is a need to strictly control the activities of such companies, and UNCED must deal with this directly. We can't afford to allow business as usual with a green face.'

'The Bhopal gas disaster in India, Dow Corning breast implants and the Dalkon shield are all clear examples of what happens when transnationals are left to regulate themselves', said Third World Network's Martin Khor. 'We must come away from

the Earth Summit with a plan that will guarantee the world a better chance of survival.'

The groups all said that the new green image touted by many transnational corporations, serves more as a 'greenwash' of their destructive practices, rather than a sincere attempt to reverse such destruction.

'TNC efforts to convince the public that they are environmentalists is a major public relations scam', said Dave Henson, International Coordinator for the US-based National Toxics Campaign. Henson said that rather than cleaning up

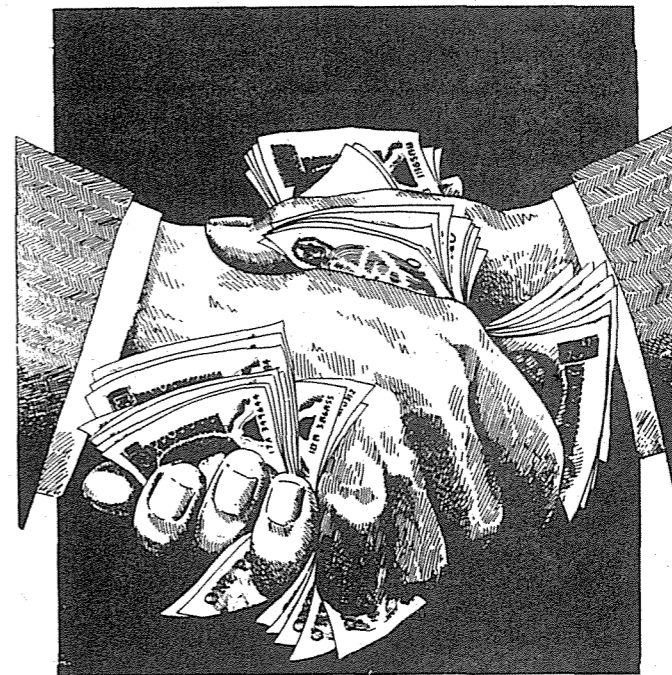
their practices, 'TNCs have consistently lobbied for weaker laws in the United States'.

The groups provided evidence of TNC irresponsibility at all levels ranging from local US battles against corporate pollution to major TNC involvement in the export and import of hazardous wastes and products. Redoubling their call for UNCED to support a G-77 proposal for a global ban on the export of hazardous wastes, products and industries, the groups cited examples of TNC opposition to this measure.

'The International Chamber of Commerce, home of the Business Charter for Sustainable Development, is the strongest lobby against toxic waste export restrictions in the Northern Industrialized countries', said the National Toxics Campaign's Dave Henson.

Corporate irresponsibility accompanied by greenwashing and opposition to essential forms of environmental regulation constitute what the Third World Network's Martin Khor called 'a counter-trend to sustainable development'.

Source: Greenpeace International.



Radioactive waste site wanted

The Australian Government is looking for a place to dump radioactive wastes.

In late 1990 and mid 1991 the National Health and Medical Research Council (NHMRC) published draft Guidelines and a Code of Practice for low and intermediate level radioactive waste disposal. The preferred option outlined in these papers is for the wastes to be put in a shallow land-fill in a semi-arid zone.

A revised draft of the Code and Guidelines is due to be released in April 1992.

Greenpeace Australia has produced a leaflet criticising the current NHMRC proposals and encouraging greater public input to the NHMRC process. Greenpeace argues that the dumping of waste in shallow landfills is an unacceptable practice.

While promoting waste minimisation, Greenpeace is also supporting above ground dry storage at the site of generation as an alternative to shallow landfill.

For further information:
Greenpeace Australia,
Studio 14, 37 Nicholson St,
East Balmain, NSW 2041,
Ph: (02) 555 7044

Dolphins in captivity

Both France and Germany are planning to establish new dolphinariums in 1992 despite the problems of keeping dolphins in captivity. Over 50 per cent of dolphins do not survive capture and transport. Their lifetime in a dolphinarium is also drastically shortened (in Switzerland to an average of 5.7 years)

The French 'Marine Reunion' dolphinarium is due to be set-up by December 1992. It is being built with the financial help of the French administration and also involves a businessman, Mr Patrice Hoffshir, working from an overseas French territory - the island of La Reunion off Madagascar in the Indian Ocean.

It is planned that six captive dolphins from South Africa, four sea lions, two penguins and later on, a couple of orcas will be imported to France for the new dolphinarium.

Environment groups are asking people to write letters to the French Minister of the Environment, Mr

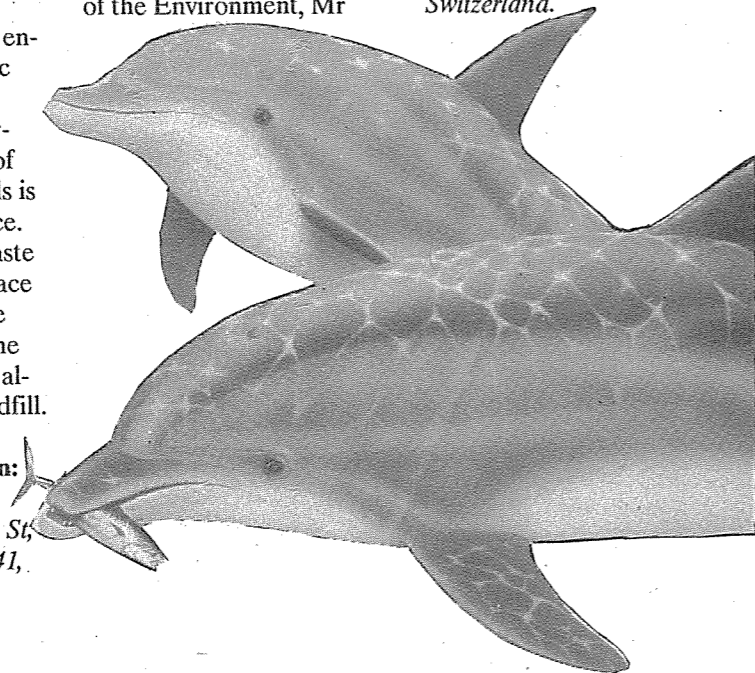
Brice Lalonde, Ministre de l'Environnement, 45av. Georges Mandel, 75116 Paris, France, as soon as possible, to prevent the importation of these animals and to stop the project.

A dolphinarium is also planned for Duisburg in Germany, according to the German whale protection organisation (OCEANIA). The 'mega-dolphinarium' will have an area of 630 square metres with three pools for the two Belugas and a Jaçobita (Dolphin) which are currently located in a smaller pool in the Duisburg zoo.

But although the new venue will provide 'more space' the capture of new Belugas and Jacobitas is already being discussed.

OCEANIA is demanding an immediate stop to the planned construction of the 'Walarium', suggesting that the money be used instead to set free the whales which are already kept in captivity.

Source: Working Group for the Protection of Marine Mammals, PO Box 476, CH-8810 Horgen, Switzerland.



Rainforest imports decline

Imports of rainforest timber from Malaysia into Australia in 1990-91 were the second lowest in twenty years. According to figures produced by the Australian Bureau of Resource Economics imports of sawn timber fell by 28 per cent to 141,00 cubic metres. The fall in total timber imports from all countries was 12 per cent. Recession, the decreasing availability of large logs in the Peninsula Malaysia and continuing protests by environment groups have combined to produce this fall.

Malaysia's share of Australian sawn timber imports has fallen from 16.6 per cent in 1986-87 to 11.4 per cent in 1990-91. However timber extraction from Malaysia, especially Sarawak, continues at a fast rate.

Interestingly Australia imports very little timber from Sarawak. According to *Maskayu*, the monthly timber bulletin of the Malaysian Timber Industry Board, Australia received 5,492 cubic metres out of a total 15,345,863 cubic metres logged out of Sarawak in 1989, or 0.03 per cent of the total. Most of the Malaysian timber imports into Australia come from Peninsula Malaysia.

The Melbourne Rainforest Action Group on 30 March 1992 attempted to evict the Malaysian Consulate in a continuation of the campaign to halt Malaysia's irresponsible forestry practices.

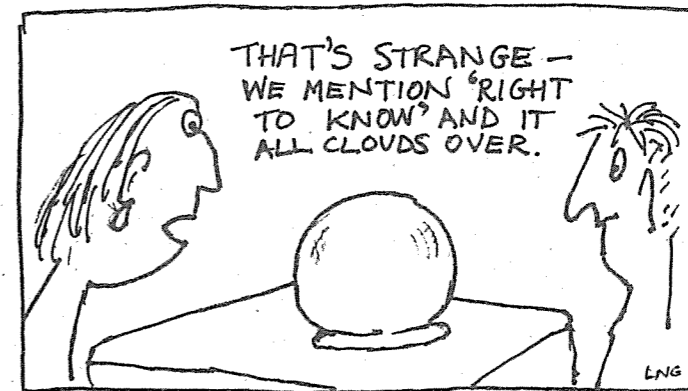
Source: Australian Bureau of Resource Economics, *Maskayu*.

Right-to-Know

Amendments to legislation to extend public access to information on hazardous chemicals were recently defeated in the United States. The *Emergency Planning and Community Right-to-Know Act 1986* currently requires US companies to draw up an annual inventory of all releases of 322 hazardous chemicals from plants above a certain size. This information is available to the public.

In March 1992 a Congress Subcommittee on Hazardous Materials and Transportation voted against extending these requirements.

The sub-committee



voted, nine to eight, against expanding the list of chemicals from 322 to 507.

Another amendment, also defeated, would have required the reduction in use of certain chemicals.

In Australia, there is currently no Federal or State legislation that provides community access to information on storage

or emissions of hazardous chemicals.

The Coode Island Review Panel, which is investigating the huge chemical fire at Coode Island, Victoria, in August 1991, has commissioned a report on 'right-to-know' as part of its inquiry. The *Preliminary Right to Know Report* prepared by the Hazardous

Material Action Group has recommended that 'workers and the community should have the 'right to know' about the usages of hazardous materials in their workplace and environment' and that an inquiry be established to develop appropriate legislation in consultation with the community.

It is expected that these recommendations will be incorporated into the *Coode Island Review Panel Final Report* which is due to be released in April 1992.

For further information:
Hazardous Materials Action Group, PO Box 27, Yarraville, 3013, Victoria.

Where there's a wheel there's a way

The first national conference on cycling issues in Australia for many years was held 23-25 March in Melbourne.

Over 200 people from Australia and other countries met to share ideas, develop strategies, and a great deal of enthusiasm was generated.

Nearly 100 papers were presented on subjects such as: the design of bike-friendly roads and paths; bicycle law enforcement; bicycles and greenhouse; urban planning, traffic calming; cycling education; community cyclist activism; the design of bicycles for people with disabilities; and cyclist behaviour.

There were some contentious issues including: the rights of cyclists on busy roads; single use

paths versus shared pedestrian and bicycle paths, and; law enforcement and compliance.

There were a number of representatives from all spheres of government and a statement was negotiated between them and the bicycle groups on the actions needed from governments to facilitate cycling in Australia.

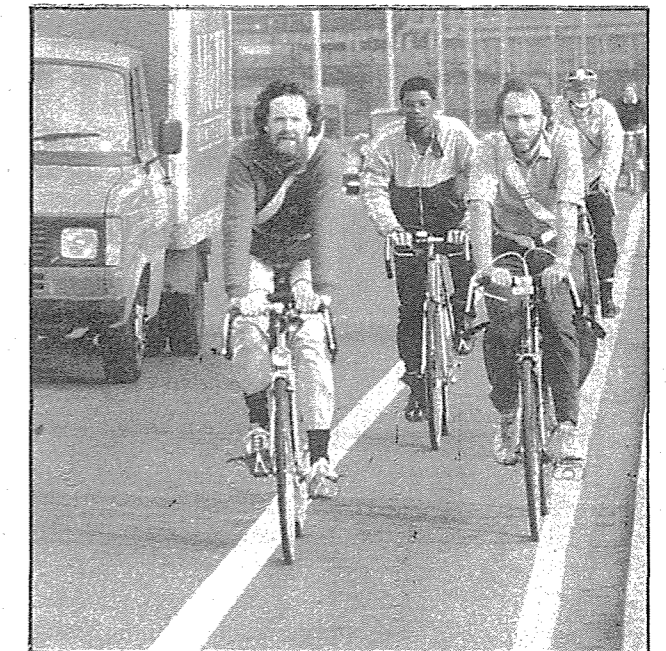
The statement was adopted by the conference and included calls for: improved data and research on bicycle usage, disincentives to cycling and strategies for its encouragement, the causes of crashes and the effectiveness of countermeasures; allocating 3 per cent of all road funding to bicycle programs; setting a target of 20 per cent of all urban trips to be made by bicycle by 2000.

The conference en-

dorsed the commitment by the Federal Minister for Land Transport, Bob Brown, to implement a National Bicycle Strategy, and made a number of specific recommendations as to what it should include.

The next national bicycle conference will be held in Sydney in 1994 and will review the implementation of the National Bicycle Strategy.

Source: *Bicycle Victoria*.

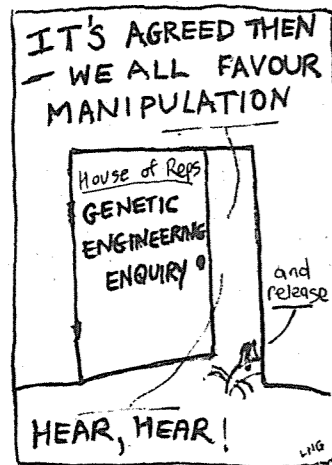


Genetics report a fast track option

The House of Representatives Standing Committee on Industry, Science and Technology tabled its report into genetic engineering in Australia, in March 1992. The report *Genetic Manipulation: The Threat or the Glory* recommends that the present voluntary guidelines on research and deliberate release be made mandatory.

The preferred option of the Committee would be for these guidelines to be expressed in regulations under an Act of Parliament, rather than as clauses incorporated into an Act of Parliament.

Under the former approach, the regulations can be made and changed at the discretion of the responsible Minister, without



public notice or discussion being required, whereas guidelines incorporated into an Act of Parliament require debate in both houses of parliament and therefore allow for greater community input.

The Report also recommends that responsibility for these guidelines return to the Department of Science and Technology, which according to the Australian Conservation Foundation (ACF) and Richard Hindmarsh, an eco-scientist at Griffith University, will create a clear conflict of interest as this Department also promotes and funds research and development of genetic engineering. 'It is a blueprint for the fast track approval of research and commercialisation of the technology', said Bob Phelps, of the ACF.

The ACF believes that genetic engineering controls should be administered by the new Commonwealth Environmental Protection Agency.

Richard Hindmarsh argues that the report is 'the latest in a string of developments in Australia since 1974 to favour the genetic engineers and the bioindustry'.

In 1987, the then Recombinant DNA Monitoring Committee was moved from under the control of the Department of Industry, Technology and Commerce to a more 'neutral' agency, the Department of Administrative Services, as the Genetic Manipulation Advisory Committee (GMAC).

The Report proposes that GMAC be retained to 'grant approval for contained work ... and as a

specialist advisory body'. A Genetically Modified Organism (GMO) Release Authority created under uniform State and Federal law would be responsible for the 'authorisation of all releases of GMOs' for experimental and commercial purposes.

The Report recommends that the GMO Release Authority could decide to advertise release proposals 'if it considers this desirable' and the Minister should have the discretion to order public hearings. With major restrictions on the grounds of commercial confidentiality, the interested public may also have access to information about genetic engineering work.

The report acknowledges the need for some labelling of products which contain GMOs or are produced by GMOs but says that this should be decided on a case by case basis.

Not surprisingly the peak industry organisation the Australian Biotechnology Association has supported the report's recommendations.

ACF believes that there is 'an urgent need for public pressure on politicians who will soon decide which of the recommendations to implement, and how'. They are also calling for an open system of regulation that allows the public to be fully informed and able to participate in regulatory decisions.

Source: *Australian Conservation Foundation; Australian Biotechnology Association; Richard Hindmarsh.*

More radiation leaks

Fears of a Chernobyl type disaster ran high recently after a serious radiation leak in a reactor complex west of St. Petersburg. The Sosnovy Bor plant, comprising four RBMK style reactors and located only 75km from the Estonian border, was shut down following a leak on 24 March 1992.

It is claimed that total radiation levels were five times above the maximum permissible level, whilst radioactive iodine exceeded this level tenfold.

The Sosnovy Bor plant is the same style of reactor as that at Chernobyl and had recently attracted serious criticism from a visiting Swedish nuclear safety delegation.

Prevailing wind patterns and localised rainfall resulted in the bulk of the emissions being concentrated in the neighbouring Baltic states, further compounding these newly independent nations' nuclear inheritance.

After the accident environmental and anti-nuclear groups throughout Europe renewed their calls for the immediate closure of the sixteen remaining operational RBMK reactors in the former Soviet Union, and the rapid phase-out of the wider nuclear industry. The governments of Norway, Denmark and Sweden have all expressed grave concerns over the safety of the Soviet nuclear industry and the German Government has supported environmental groups in calling for the closure of all existing RBMK reactors.

Source: *Greenbase*

Cotton problems

The use of agricultural chemicals in the cotton growing region in northern New South Wales and southern Queensland has recently attracted the attention of health officials, the local community and environment groups.

Some argue that the region is the most chemical-sprayed area in the world. The high usage of agricultural chemicals is seen as a possible cause of the adverse health effects showing up in recent studies.

Medical geographer, Professor Peter Curzon of Macquarie University, has revealed that the asthma mortality rate in the towns of Moree and Narrabri, compared with cities, was respectively four and 9.7 times greater. He also showed that Bingara, on the edge of the cotton country, has the highest cancer and leukaemia rate in NSW.

The New England regional Health Department also found a higher rate of neuroblastoma among children.

In response to ongoing problems the Narrabri Shire Council considered a two kilometre buffer zone to protect the town from chemicals, largely due to mis-sprays. Some farmers have been charged for dumping tailings into town water supplies in the region.

In the United States 25 per cent of all insecticides

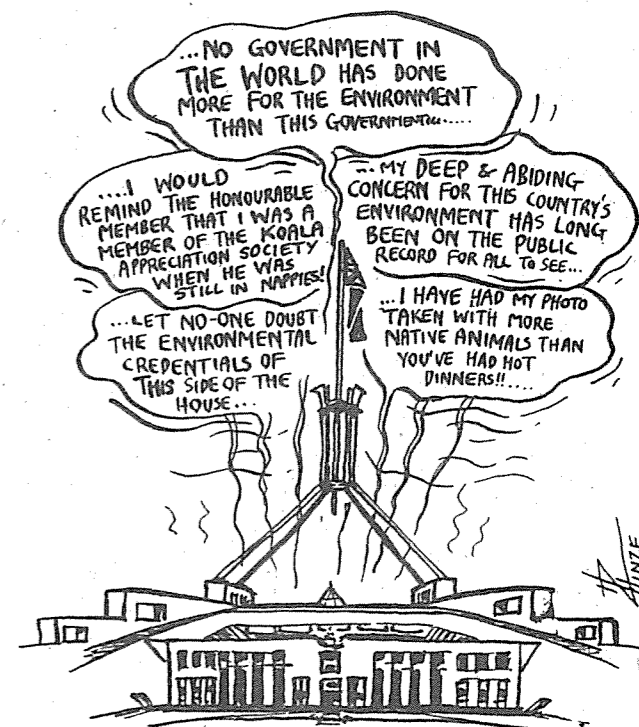
are used on cotton alone, and in many developing countries, over half of all pesticides used are applied to cotton. One of the pesticides widely used is the deadly poison paraquat, which is sprayed on cotton as a defoliant.

The widespread use of defoliants in California's Central Valley agricultural region has been linked to health problems, including respiratory ailments.

Cotton is grown mainly for its fibre but cotton seed, which represents about two-thirds of the crop by weight, is widely used as animal feed and to make cooking oils. The intensive spraying of pesticides on cotton right up to the time of harvest raises concerns that the chemicals could be entering food supplies.

As part of its commitment to 'clean production' and sustainable agriculture Greenpeace announced, in March 1992, a commitment to offer only organic cotton in its merchandise as soon as the market can provide adequate supplies. Greenpeace says that cotton growers and the clothing and textile industry must convert to organic cotton - not only to eliminate dangerous pesticides, but also to meet the growing demand of consumers for more 'environmentally sound' products.

Source: *Nimbin News, Greenpeace San Francisco.*



GREENHOUSE EMISSIONS

Long live the working group!

Although the Ecologically Sustainable Development (ESD) Working Groups released their final reports in December 1991, the outcome of the ESD process is as yet undetermined.

In early 1992 a Federal State ESD Working Group was formed. It is chaired by the Commonwealth and involves representatives of the States and Territories and the Local Government Association. Under this umbrella approximately 37 working groups of officials have begun to examine the ESD reports to develop an implementation plan. At the Commonwealth level the reports are being considered by an inter-departmental committee.

The objective is to develop a framework strategy for consideration by Heads of Government in

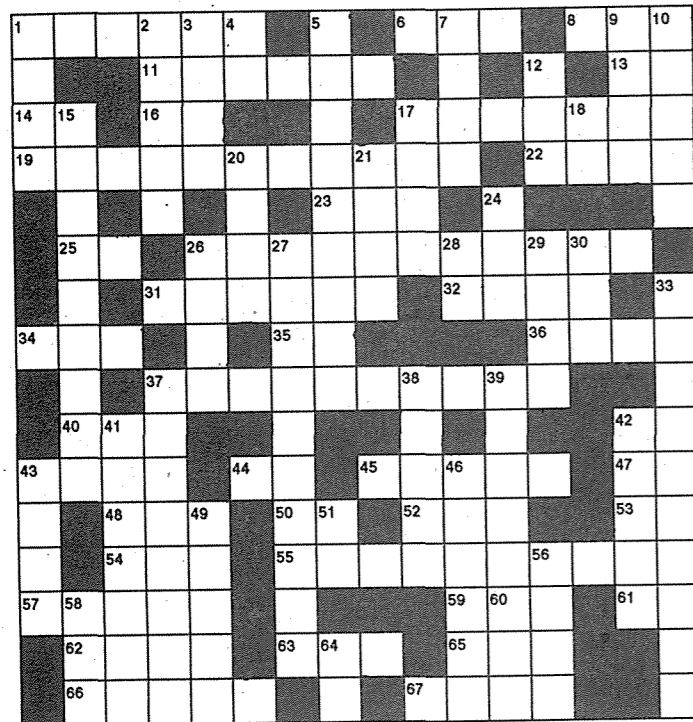
May 1992.

The Australian Conservation Foundation and World Wide Fund for Nature had a joint ESD Policy Unit which monitored the process and suggested that a number of key initiatives are necessary if the best parts of the ESD are not to be buried in committees.

The initiatives which would need to be established or developed would include: a Federal Office of Ecologically Sustainable Development; a limited number of ESD Task Force groups, which would include industry and community interests; a strong Federal EPA which would act as the lead agency at the Commonwealth level; an Environment Auditor-General's Office; broad ranging community consultation and education.

Source: *Habitat Australia, ESD Newsbrief.*

Please note Chain Reaction's new phone and fax number.
Ph and Fax: (08) 293 8535



Greenword 66

Prepared by the Impromptu Collective
Solution next issue

Across

- 1 We ___ rallies, meetings and conferences to green Australia
- 6 ___ systems make the world go round
- 8 A charged particle
- 11 Adventitious roots of some trees are ___
- 13 A friend of Jonathon Porritt's
- 14 With it, groovy, a member of FOE
- 16 Madame Curie's killer
- 17 Pertaining to the human soul or mind
- 19 Our geopolitical region
- 22 ___ and every one
- 23 An elemental metal mined in Malaysia and Bolivia at least
- 25 A preacher's trade, but not compulsory at school any more
- 26 The chemical industry blocks it, but it's our way to get information
- 31 An indigenous nation
- 32 Widely used in energy expensive advertising, especially at night
- 34 It's the only ___ we've got
- 35 This only exists in policies
- 36 After the shuttle crash this US military pioneering body Needed Another Seven Astronauts
- 37 You can grow plants in one or change the climate with its effect
- 40 Initials of the union which refuses to transport nuclear materials by rail
- 42 Yes in Italian or Spanish
- 43 ___ market economics is not the answer to ecological problems
- 44 Owns 49 per cent of Roxby Downs Joint Venture
- 45 ___ hold up half the sky, at least
- 47 Same as 3 down
- 48 ___ for ___'s sake?
- 50 ___ tu, Brute?
- 52 Drift ___ fishing kills more than it should
- 53 Acronym for one of the world's worst car cities
- 54 Not in dictionary but at start of ___cus, along with clowns and music
- 55 That Canberra arms exhibition that won't be there again
- 56 A gemstone found in some dry bits of Australia
- 57 A distinctive appellation indicating payment of bribes, especially in Joh's Queensland
- 59 This big company is best known for its computers, but not for its role in missile guidance systems
- 61 Married to the UK's leading yuppie greenie
- 62 An actor's part or character
- 63 And others (abbrev.)
- 65 Can be blamed for everything
- 66 Rub out
- 67 Within a short period

Down

- 1 Good for a prima donna
- 2 It needs more friends
- 3 There are mound springs located ___ Roxby Downs
- 4 The good ones bulk bill
- 5 An organophosphate pesticide, part of the 'dirty dozen', which is so acutely toxic that a teaspoon spilled on the skin can be fatal. It is still used in Australia
- 7 A house in Spain
- 9 Describes a celebratory poem
- 10 The position of an organism in a community of plants and animals
- 12 Water at zero degrees at sea level
- 15 Australia's crucial contribution to the Gulf War
- 17 Imperial milk bottle
- 18 What the platypus said when Ros Kelly was appointed Environment Minister
- 19 Spy organisation - America's Subservient Intelligence Organisation
- 21 Endangered species, highly sought after by toxic and nuclear waste bodies
- 23 Farmers ___ out a subsistence living
- 25 Lions and lionesses do it
- 26 Subject to French bomb attacks meal
- 27 ___ your bike
- 28 How many safe nuclear reactors are there?
- 29 Leader of the Bougainville Republic Army. Also acronym for ASIO's dad
- 30 Is it the answer to environmental problems or does it create them?
- 36 ___ tactics are sometimes used to liberate monkeys and other animals
- 38 Leave as is (editor's terminology)
- 40 Radioactive pollution centre
- 41 Often part of a healthy green
- 45 The most populous city. Also has serious smog problems.
- 48 Some people want to hug them, but for others they're a sore point
- 50 ___-tree oil is very useful as a natural antiseptic
- 55 Name of an oil-producing country which is in the top ten CO₂ producers per capita.
- 57 Anger
- 59 ___ degradable is not always what it should be
- 63 A good one ___ end with

An active group in Maitland

Friends of the Earth Maitland has meetings on the first Tuesday of the month, and produces a monthly newsletter which provides an interesting picture of the activities of a small but active group.

The group prepared a submission to the Maitland Council on the Local Environment Plan as well as encouraging others to participate in the process, and it is keeping up to date with the development of the plan.

There are three groups within FOE Maitland - Recycling, Education and Tree planting.

The recycling group has been developing campaigns on plastic bags and unnecessary packaging. Activities have included sending letters, specimens of offensive packaging and rubbish to State and Federal members of parliament in the area. The recycling group has also been identifying recyclers in the local area and has been collecting recycled and other goods for fundraising stalls.

It also developed a green Christmas song, which ends:

*On the twelfth day of Christmas my true love sent to me
twelve lads recycling
eleven forests growing
ten cyclists biking
nine people planting
eight maids a-mulching
seven solar panels
six cotton nappies
five compost bins
four eco bags
three native shrubs
two free range eggs
and a possum in a gum tree*

The education group prepares information for displays and stalls. The group has been invited to provide information,

displays and talks for a variety of community activities. The group meets regularly and works on freshening up the displays and stalls and has made posters, bathroom cleaning kits and pot pourri sachets among other things.

It has also contacted schools in the area to try to arrange the planting of a ribbon of trees along the highway to Newcastle on World Environment Day.

The tree planting group has received some money from Greening Australia and has been planting trees at the St Johns Conference Centre. The group watches the weather and has not been assisted by the drought in the area which killed many trees, although it has tried to do watering to help them through the dry times.

It has also done a lot of mulching with at least 100 bales of hay.

FOE Maitland also supports other campaigns, such as the Fraser Island campaign in 1991.

The group ran stalls and raised funds and provided morale-boosting support to the FOE Maryborough group who maintained a presence on the Island until the last of the loggers had left.

The group also maintains an interest in general environment issues through discussions at the monthly meetings, and it does its best to provide support whenever it is requested. Meta Mcbeth is the current co-ordinator and she will be attending the Earth Summit in June.

For further information write to:
16 Banks St, East Maitland, 2322,
NSW. Ph: (049) 66 5151

'Useless plastic' in Vietnamese and Spanish

A campaign to reduce the use of plastic bags in the Vietnamese and Spanish speaking communities will be launched later this month. The campaign is one of a only a few environmental campaigns that have been conducted in ethnic communities.

The campaign is being conducted by the Sydney branch of Friends of the Earth Australia, together with Vietnamese and Spanish speaking community organisations. Press releases and flyers are available in Vietnamese and Spanish on request.

Campaign convenor, Kate Flannery, said today that the campaign will encourage shoppers to say 'no' to plastic bags. Instead, they will be encouraged to bring their own shopping bag. Community announcements began in February 1992 in Spanish and Vietnamese on Radio 2EA.

A major focus of the campaign was a clean-up conducted at Canley Vale's Orphan School Creek on Clean-up Australia Day, 1 March 1992. More than 150 people attended the clean-up.

Last year's clean-up Australia Day revealed what a menace plastic is in the environment, with plastic packaging alone making up 45 per cent of items collected and plastic bags and bottles accounting for 22 per cent of the total of items collected. It is expected, unfortunately, that there will be similar figures from this year's clean-up when they are collated.

Further information contact: Kate Flannery at (02) 281 4070

EC green paper sounds alarm on UK traffic growth

The European Commission (EC) *Green Paper on Sustainable Mobility*, published 19 February 1992, shows UK Government forecasts for traffic growth are incompatible with a sustainable transport policy, according to Friends of the Earth (UK).

The Green Paper aims 'to outline the overall impact of transport on the environment and to present a Common strategy which will enable transport to fulfil its economic and social role while containing its harmful effects on the environment'.

The paper forecasts EC car traffic growth of 25 per cent between 1990 and 2010. Its 'sustainable mobility' scenario requires pegging growth to a level below this figure. The EC Green Paper outlines three scenarios for future policy: 'business as usual', 'specific action aimed at one aspect of the impact' and 'sustainable mobility'.

The 'sustainable mobility' scenario is seen as integrating transport into an overall pattern of sustainable development which should 'meet the needs of the present without compromising the ability of future generations to meet their own needs.'

Further, it suggests that 'in order to limit land intrusion of infrastructure it will be necessary to ... limit transport demand, particularly in encumbered sectors [road and air].'

But the UK Government forecasts expect car traffic to grow by 41-69 per cent over the same period, and it is building roads to meet these forecasts.

The EC Green Paper will be seen as a direct challenge to the UK's 20 billion pound National Roads Programme. The Paper cites the 'principle of subsidiarity' to suggest that national, regional and local initiatives will need to be adjusted to fit a common European strategy: 'The principle of subsidiarity ... will play an important part in ensuring that these measures and guidelines are given their full effect by appropriate national, regional and local initiatives.'

The Green Paper questions the value of road-building to reduce congestion and says that infrastructure investment should be co-ordinated with wider policy objectives. It states: 'A supply-side solution to the problem of congestion does not necessarily restore

the medium and long term capacity balance and does not, therefore, necessarily reduce the effects of the phenomenon.' Instead it suggests:

Market organisation should allow for efficient and optimal use of existing transport capacity and thus encourage a shift from encumbered sectors to sectors where there is excess capacity, particularly from road to rail ... and from private car to collective transport ... Infrastructure planning should be co-ordinated in order to contribute to that objective.

Roger Higman, Transport Campaigner at Friends of the Earth said: 'The European Commission has again demonstrated the failures of the UK Government's transport policy. Traffic increases planned for by the Department of Transport's roads programme far exceed the amount the environment can stand.'

Source: *Friends of the Earth, UK.*

FOE solidarity for Kamaria

Friends of the Earth Fitzroy has established a solidarity group in support of the people of Kamaria and those regions its military have annexed in recent years (with Australia's encouragement).

The expansionist Generals tried to divert attention from opposition and separatist movements at home by taking an aggressive stand against criticism by Australian community groups and Aid organisations, and even the submissive Australian government was left wondering who would be attacked next.

During the last week of March FOE Fitzroy also became the Kamarian Embassy and on 26 March 1992 held a public meeting to analyse what was happening in Kamaria and the expected Australian government response.

FOE Fitzroy also provided information on Australia's latest military exercise, Kangaroo '92, held in northern Australia in late March, which aimed to develop 'anti-Kamarian strategies' and tactics in the northern wet season in case of attack by a mythical near northern neighbour.

For further information contact: Clive, Linette or Dave on (03) 419 8700.

Environment groups meet Kelly

Two or three times a year, representatives of national environment groups and the state conservation councils meet with the Federal Environment Minister to discuss issues of concern to both parties.

Following the controversy (media beat-up) surrounding Ros Kelly's comments at the September 1991 meeting about then Prime Minister Hawke's approach to Commonwealth-State relations, the proceedings at the April 1992 meeting were rather subdued, and both sides were cautious.

Issues which were discussed included the need for a national biodiversity strategy and a national forest protection strategy and whether the former would be ready in time for the June UNCED conference.

Other issues included the progress toward a National Environmental Protection Agency, fears about the role of Laurie Brereton, the new Parliamentary Secretary for 'fast-tracking' new developments, the usefulness or otherwise of the Inter-Governmental Agreement on the Environment, a potential future role for the Federal Government (through the Environmental Protection Agency) on 'smoggy' issues currently the preserve of the states.

I raised the issues of waste minimisation, recycling, packaging and the Environmental Choice scheme. The targets for recycling are not ambitious, and have been watered down by industry in the case of paper. I suggested that the German Federal packaging legislation, which involves acceptance of all packaging at point-of-sale, was a good model, but the Minister seemed to think that the difficulties of getting industry as far as they had ruled out anything more adventurous. The Government's Environmental Choice scheme suffers from not attempting to look at products on the basis of 'cradle-to-grave'.

I encouraged the Minister to attempt to hold the line on greenhouse targets. There is considerable pressure from industry and within Cabinet to drop the whole issue.

Source: *Stuart White, representative of Friends of the Earth Australia.*

Join your local Friends of the Earth group

FOE Adelaide University
c/- Clubs Association
University of Adelaide
Adelaide, SA, 5000
Ph: (08) 228 5852

FOE Flinders University
Students' Association
Bedford Park, SA, 5042
Ph: (08) 201 2614

FOE Nouveau
PO Box 3231
Grenfell St, Adelaide, 5001
email: roman

FOE Willunga
PO Box 438
Willunga, SA, 5172
Ph: (085) 56 2252

FOE Brisbane
PO Box 10159
Adelaide St
Brisbane, 4000

FOE Stanthorpe
c/- Lyn Alexander
PO The Summit
Stanthorpe, Qld, 4377
Ph: (076) 83 2245

Chain Reaction
GPO Box 90
Adelaide, SA, 5001
Ph & Facs: (08) 293 8535
email: chain

FOE Cessnock
c/- D. Rothwell
Littlewood Rd
North Rothbury, NSW, 2335
Ph: (049) 90 2256

FOE Newcastle
15 Sketchley Pde
New Lambton, NSW, 2305
Ph: (049) 52 3385
(049) 674554 (h)

FOE Snowy Mountains
PO Box 31
Cooma, NSW, 2630

FOE Maitland
16 Banks St
East Maitland, NSW, 2322
Ph: (049) 66 5151

FOE Sydney
PO Box A474
Sydney, NSW, 2001
Ph: (02) 281 4070
Facs: (02) 281 5216
Email: foesydney

FOE Fitzroy
222 Brunswick St
Fitzroy, Vic, 3065
Ph: (03) 419 8700
Facs: (03) 416 2081

Maryborough
5 Clayton St
Maryborough, Qld
Ph: (071) 23 1895

FOE Perth
280 Newcastle St
Perth, WA, 6000
Ph: (09) 335 9359

Kyneton Environment Awareness Group
c/- WSD Springhill
via Kyneton, Victoria, 3444

National Liaison Officer
Cam Walker, FOE Fitzroy
222 Brunswick St
Fitzroy, Victoria, 3065
Ph: (03) 419 8700

FOE International Secretariat
PO Box 19199
100 GD Amsterdam
The Netherlands
Ph: 31 20 622 1369
Facs: 31 20 627 5287

Friends of the Earth is a community based organisation which actively encourages a better understanding of the environment. FOE promotes the restoration, conservation and sustainable use of the Earth's resources through public education and by providing positive alternatives and encouraging people to influence those making decisions affecting the environment.

In search of ecocities

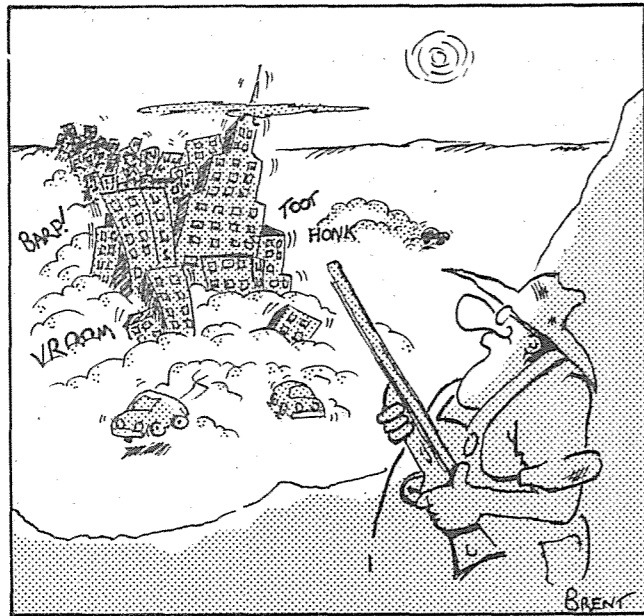
Roman Orszanski looks at the background to the EcoCity movement.

SINCE the '70s, environmentalists have been concerned with urban issues. In fact, the first campaign by a FOE group in Australia was over recycling legislation for cans — the first target was Coca-Cola! This was part of the early '70s concern with resource use.

By the mid '70s, the Australian Conservation Foundation was publishing articles on urban planning. It wasn't until the '80s, however, that people started looking at cities as entities, with interconnected systems which provided food, water, power and transport.

The move to consider cities as a whole came from four quarters: the *public health movement* recognised broad issues concerning quality of food, air and water were determined by the structure and operation of cities; the *environment movement*, in analysing energy usage, discovered that they had to tackle city form to make major savings in energy use; the *anti-freeway groups* realised that modern cities were designed for cars, not people; and many of the *planning professionals* started to look at the larger picture as urban sprawl and decaying infrastructure posed difficult questions.

The World Health Organisation launched its 'Healthy Cities Campaign' a few years ago; Peter Berg and the Planet



From his vantage point overlooking the plain, Farmer Jones looked down on the approaching sprawl. Hopelessly outnumbered, he was ready for a showdown.

Drum Foundation created a 'Green City Program' for San Francisco, Richard Register and Urban Ecology organised the First International Ecological City Conference in 1990.

As Register wrote in the introduction to the proceedings of that conference:

A new idea is emerging... it is a concept of two parts: first, that we of the human species have been building our cities and towns in disregard of natural principles; and second, that to build in balance with nature hold promise of far healthier ecological and social arrangements than we have experienced for hundreds of years, perhaps ever.

In Australia, the most highly urbanised country on earth, it is appropriate that we devote our attention to the cities. They are where we live and die, where we love, play, dance, work and meet.

The realisation that cities are shaped, and therefore can be reshaped, has provided impetus to the movement to rebuild and redesign cities. The 'Green City Projects' aim at rebuilding existing cities to better fit their environment; some are designing the 'EcoCity' from scratch, and a few are proposing the 'EcoPolis' — a city designed to restore the ecological balance.

All three are concerned not just with environmentally sound cities, but with socially effective ones; it is not enough to impose a solution, we have to help rebuild neighbourhood and community, and allow the neighbourhood to devise an appropriate solution.

Despite the reputation of Rome, cities aren't eternal: most Australian cities will be completely rebuilt in the next 50 years. The articles in this issue suggest how we might rebuild cities. Remember, if we are to solve the environmental problems we have, we will have to solve them in the cities.

This special issue of *Chain Reaction* features edited extracts and selections from papers to be presented at the Second International EcoCity Conference, held in Adelaide in April 1992. Urban Ecology, the organisers, have kindly let us use papers from the conference. They are publishing the proceedings in full, with the original papers excerpted in this issue.

Please note that since these articles weren't originally written for *Chain Reaction*, the copyright remains with either the authors or Urban Ecology.

Roman Orszanski is coordinator of FOE Nouveau's Green Cities Project, which hopes to transform Adelaide.

From grey to green

Cities are getting out of control. The only solution, argues Peter Berg, is a new set of principles for urban living, a Green City program.

CITIES have changed in fundamental ways since the middle of this century. They have become incomprehensible and dangerous, and their future is one of the most important planetary considerations confronting humankind.

The largest are two and three times the size New York was in 1950 when, with eight million inhabitants, it was already considered to be impossibly huge. At present Mexico City leads with over 22 million. Tokyo and Sao Paulo, among others, have only a few million less.

Whatever their current size, nearly all cities will continue growing at a faster rate. About 100 metropolitan areas with at least five million people are projected for 2025, three times as many as there are today.

Cities this big can't be known intimately. No longer merely the centres of countries, they have become independent organisms whose constantly changing sets of systems continually move beyond knowledge and control.

Cities also demand too much from their bases of support, overreaching local bioregions to pull in resources from thousands of miles away. As cities continue to expand there is ever-increasing competition for the same water, energy and food resources.

Once a rare and privileged way of life supported by a large agriculturally productive rural population, city-dwelling is fast becoming the norm. In spite of the fact that they are grotesquely overgrown compared with the recent past, over-extended and subject to crippling disruptions, urban environments will soon be the primary inhabitation sites for our species. As late as 1950 less than 30 per cent of the world's population lived in cities and towns of 25,000 or more. But by 2000 half of humanity will no longer live on the land. In some places the figure will be much higher — over 75 per cent in Latin and North America, Europe, East Asia and Oceania. Fewer people remain in direct contact with nature at a time when more urbanites need to produce part of the resources they consume.

Cities not only restrict beneficial contacts with nature, they inexorably surround and destroy it. Open spaces

that previously separated urban areas fill in with new developments to encircle natural areas like cages in a zoo.

Metropolitan areas have the densest numbers of people so they are the places where most resources are consumed and most wastes are produced. Consumption levels for industrialised countries are excessive in general and sometimes outrageously bloated. Outright squandering of resources is commonplace and can be plainly seen where hydrant water pours down gutters for hours, newspapers and packaging litter streets, and hundreds of thousands of unnecessary electrical lights burn all night.

The effects of city-generated wastes and sewage are often less visible but much more perilous. Rivers, lakes and bays near urban areas are universally subject to some degree of pollution, sometimes so much that they become devoid of aquatic life. Soil and underground water near garbage landfills are contaminated with deadly concoctions. Airborne factory smoke and traffic exhaust kill nearby forests and poison far-distant lakes. Even when controls are attempted they are often quickly outdated by the sheer volume of urban growth.

These are large-scale problems whose simultaneous effects are capable of cracking the foundations of our present social and political life. Many cities have begun to reveal a neglected and grim side that forecasts a meaner future. Their wounds show openly in ruined inner districts, abandoned and burned-out buildings, empty factories with rows of broken windows, debris-filled vacant lots, and potholed streets.

Further growth will lead to deepening crises such as can now be found in Mexico City: as more people arrive, there are declining job opportunities, housing shortages, and a growing disparity and animosity between well-off and poorer individuals and districts. We have already begun to see withdrawal of whole sections of cities from administrative control and essential services, mounting physical and mental health problems, and the decay of basic infrastructures ranging from public education to sewage systems.

Bioregional values

A profound transformation is needed in the way cities are conceived. This can't be merely administrative reform or change in design of systems or structures because it needs to involve a completely new set of priorities and principles.

The first step toward reconceptualising urban areas is to recognise that they are all situated in local bioregions within which they can be made self-reliant and sustainable. The unique soils, watersheds, native plants and animals, climate, seasonal variations, and other natural characteristics that are present in the geographical life-place where a city is located constitute the basic context for securing essential resources of food, water, energy and materials. For this to happen in a sustainable way, cities must identify with and put themselves in balanced reciprocity with natural systems. Not only do they have to find nearby sources to satisfy basic human needs, but also to adapt those needs to local conditions.

Bioregionally founded values that are appropriate to each place should be agreed upon and then used to direct municipal policies. Guidelines for doing this can be transferred over from some basic principles that govern all ecosystems.

Interdependence: Heighten awareness of interchanges between production and consumption of resources so that supply, re-use, recycling and restoration become more closely linked. Reduce inequitable exploitation.

Diversity: Support wide ranges of means to satisfy basic human needs and a multiplicity of cultural, social and political expressions. Resist single-interest solutions and monoculture.

Self-regulation: Encourage decentralised activities carried out by groups in neighbourhoods and districts. Replace top-down bureaucratic agencies with grassroots assemblies.

Long-term stability: Aim policies to work under various conditions and for several generations. Minimise short-term programs and patchwork remedies.

When the principles of interdependence, diversity, self-regulation and long-term stability are used it is possi-

ble to make much more ecologically coherent and therefore more practical decisions than are generally seen today.

Green City Program

Each urban area needs to develop an ecologically oriented Green City Program that delivers a high quality of life for all of its residents in harmony with its bioregion. City greening includes urban planting, but also means conversion to renewable energy, development of suitable transportation, extensive recycling and re-use, greater empowerment of neighbourhoods, support for socially responsible small businesses and cooperatives, restoration of wild habitat, wide participation in planning for sustainability, and creation of new civic art and celebrations.

There are already many separate groups working in various sectors toward urban sustainability who can supply pieces of an overall program, eventually joining together authentic grassroots approaches and concerns under an overarching 'green umbrella' to accomplish the massive governmental changes that are necessary. For the transition from polluting fossil fuels and dangerous nuclear power to renewable sources such as solar, hydro and wind, for example, representatives can be drawn from renewable energy businesses, labour groups that will benefit from related jobs, and agencies that regulate energy production and use, as well as from alternative energy advocacy and environmental groups.

Urban pioneers

For a Green City Program to succeed, there also needs to be a radical new consciousness about living in cities on the part of individuals. City dwelling has traditionally been easier and more luxurious than country life. Residents have been accustomed to services and amenities that were relatively inexpensive and whose continuous supply was not their responsibility. People still assume that water, food and energy will continue to flow into cities as effortlessly as in the past even though they know that the places where those resources originate have been severely degraded.

But the realities of urban life are changing rapidly and will change more drastically in the near future. Since mid-century, utilities, health services, food prices, and housing costs have increased many times over. They will rise even more sharply as cities continue to expand and compete for resources that are diminishing in quantity and quality. Presently, travellers return to comparatively prosperous countries like the United States shocked by the desperate conditions in places like Calcutta, Rio de Janeiro and Nairobi. They believe that their own communities are immune to the spectrum of problems ranging from inflation and endless delays to widespread diseases and abject poverty that they find there.

Soon it will become clear that although these calamities have struck Third World countries first, parallel developments are due for many other urban areas. There simply aren't enough basic resources, even in developed countries, to sustain the huge urban populations that are accumulating. The abundance of oil, electricity, foodstuffs and fresh water they enjoyed in the 1950s and 1960s will be seen as an anomalous historical period when precious commodities were lavishly consumed, in the same way that we now view the high quality of wood and stone used to construct ordinary buildings in the last century.

City life was once mediated and stabilised by social and cultural groupings that occupied particular districts. Established historic and ethnic communities often played the largest part in fostering an individual's sense of identity and personal angle of perception for relating to the city as a whole. These zones of security and belonging have been seriously eroded or completely destroyed and replaced by growing wastelands of anonymity and fear. Their loss is a main reason why cities are less convivial and more threatening.

We are beginning to see a historical shift comparable to the birth of the modern industrial city in the late 18th century. Urban people will be obliged to undergo a thorough transformation. To reclaim a positive outcome from deteriorating situations, city dwellers have to become 'urban pioneers' in a

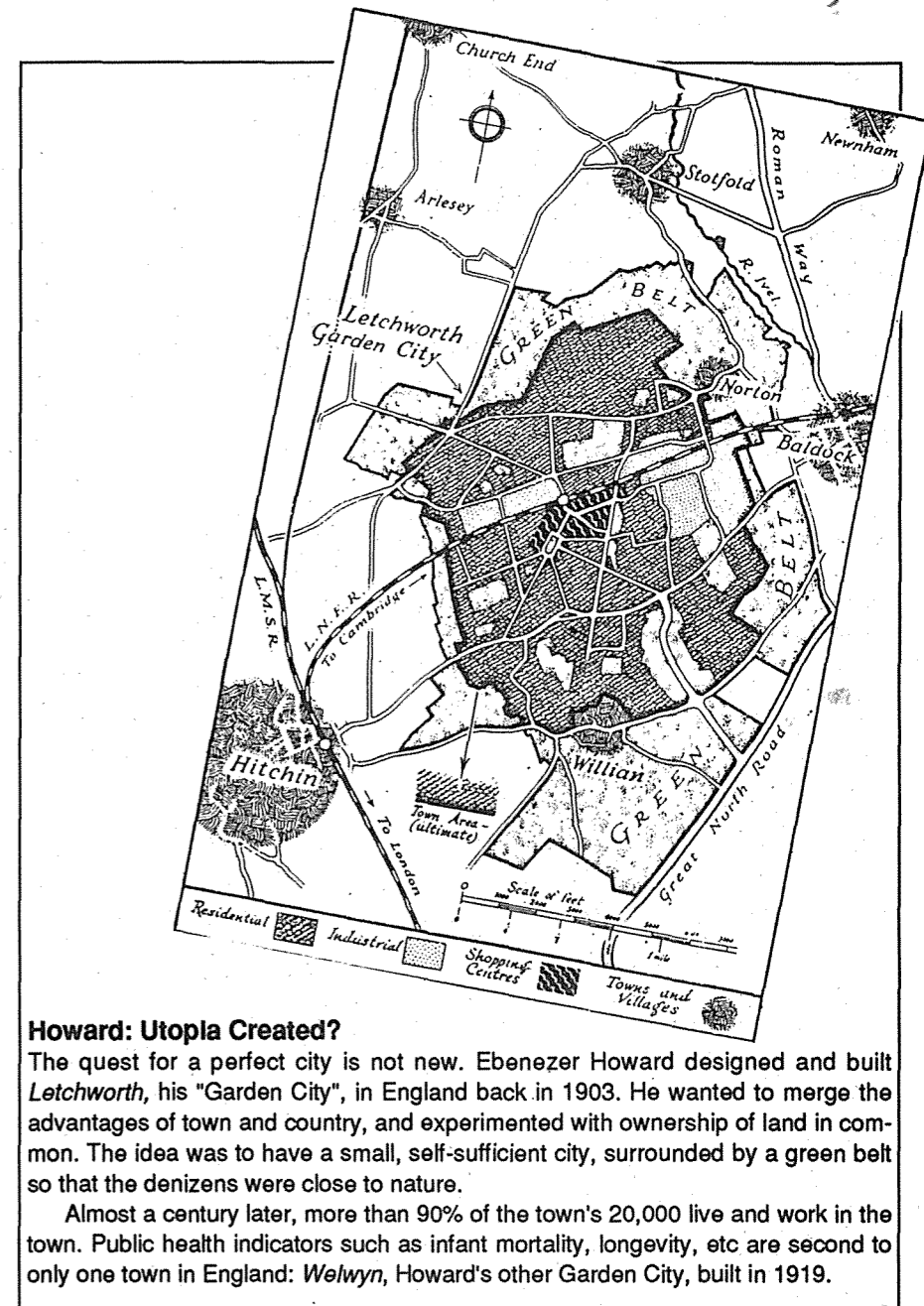
concrete, steel and glass wilderness, developing new urban forms and remaking their own lives as they simultaneously recreate the urban landscape. To do this they need to learn new skills, redirect their energy and inventiveness, and align their efforts with the more self-reliant and sustainable vision offered in a Green City Program.

The profile of an urban pioneering life includes these elements: working several part-time jobs rather than a single-employment forty-hour week; growing some food on a continuous basis; recycling household wastes and water; refitting dwellings for energy conservation and maintaining some means for producing energy from renewable sources; restoring wildlife habitats; reducing or eliminating the use of a personal automobile; developing new cultural expressions that reflect bioregional and planetary themes; and participating in a neighbourhood council to decide everything from planning and justice to social services and celebrations. It will replace the often deadening and escape-seeking urban existence of the present with stimulating, highly varied and creative pursuits that are more related to artists and naturalists than to factory and office workers. Even in a densely populated metropolis these new urbanites will be able to claim personal home-neighbourhood-villages and be fully involved with them.

Many people are already doing some of the things that lead to this transformed urban life. When most people are doing all of them, urban-dwelling will be much richer and more livable.

A saving alternative

The future prospect for cities is at a critical juncture. If allowed to continue in their present course, the detrimental effect on people, bioregions, and the planetary biosphere will soon reach an intolerable point. Currently 850 million urban people worldwide are squatters: 50 per cent of Third World city-dwellers have no plumbing or electricity. By 2000 the number of squatters will more than double to over two billion with a similar acute increase in those living without rudimentary necessities.



Howard: Utopia Created?

The quest for a perfect city is not new. Ebenezer Howard designed and built Letchworth, his "Garden City", in England back in 1903. He wanted to merge the advantages of town and country, and experimented with ownership of land in common. The idea was to have a small, self-sufficient city, surrounded by a green belt so that the denizens were close to nature.

Almost a century later, more than 90% of the town's 20,000 live and work in the town. Public health indicators such as infant mortality, longevity, etc are second to only one town in England: Welwyn, Howard's other Garden City, built in 1919.

A nightmarish scenario with billions crowded into urban heaps and living in despairing poverty has already begun. It will surely proceed to even worse stages of routine breakdowns in production and distribution of essential human requirements, collapse of basic infrastructures, extreme conflict between social and economic groups, and governmental chaos.

There is a saving alternative to this painful outcome but it requires a thorough transformation in the purpose of cities and the ways that people live in them. Bioregionally-oriented governments and ecologically-conscious resi-

dents carrying out Green City programs can end and even reverse the present ruinous trends.

Cities must change soon and in profound ways, and this huge metamorphosis can be the occasion for a positive shift in consciousness that harmonises the needs of society with those of the natural systems that ultimately support it.

Peter Berg is a bioregionalist, one of the authors of A Green City Program, and codirector of Planet Drum Foundation, which is establishing a 'Green City Center'.

Design 'n' weather

Emilis Prelgauskas looks at the principles for designing buildings for energy efficiency and comfort in South Australian conditions.

HUMANS create built form and modify the environment in the search for comfort and control over their own destiny. Cities epitomise human-made total control of the environment, to the point where the built form even incorporates mechanical technology to create an artificial internal climate independent of that outside.

As a result, traditional principles of integrating environmental influences into buildings have fallen into dis-use. Natural systems like weather are now seen as a problem to be conquered and controlled with human technology.

This approach is highly energy intensive, but people's fear is that energy conservation will impose reductions in quality of personal lifestyle.

However, reactivating long known principles of 'micro-climate' and their application to building design will achieve comfort with minimum energy expenditure. Weather is a resource to be harnessed to achieve human comfort.

The creation of local weather conditions as a result of harnessing the local landform, terrain, geology, vegetation and neighbouring built form, as well as the orientation of built form, the heat imbalance sun side to shade side around built form, and the airflow pressure imbalances on the building envelope from both wind and thermal interactions, all provide opportunities for heat and air movement to create comfort. The internal disposition of space, and the integration of features including heat sinks, heat sources, and vent paths are additional elements in integrating micro-climate action in built form.

Passive solar principles

It is usual to consider 'passive' solar principles in designing buildings; these principles are characterised by the shading of windows from the summer sun and encouraging the infiltration of winter sun warmth to interior surfaces of buildings.

This approach is the focus of the established energy efficient design approach, formalised in Australia through rating systems such as the '5 Star Design Guidelines'. It is based on European and North American experience where the critical energy efficiency case is maintaining internal warmth in winter. In Australia this approach has some merit in only limited areas.

South Australia has an essentially 'arid desert fringe' climate, sometimes described as 'Mediterranean', though this tends to understate the summer heat impact, the scarcity of water and other factors which make 'Mediterranean' solutions inappropriate. The large continental landmass to the north and proximity of the southern ocean results in hot summer north winds and winter cool south-west winds.

University of Adelaide research confirms anecdotal evidence that the critical energy efficiency case is to minimise heat ingress to the building interior in summer. This requirement is not adequately addressed in the '5 Star' or other established energy conservation systems.

Passive solar design which minimises heat gain from outside also does not go far enough. While it insulates and shields out the sun heat, it makes no allowance for the internal heat genera-

tion from the presence of people and appliances.

A broader approach to energy efficient design in the desert fringe climate of South Australia is needed, one which maximises the existing climate and landform forces to support the passive built form performance.

Micro-climate design begins with the attitude that weather is not a problem to be conquered by technology; rather that it is a force to be incorporated in building design to achieve comfort.

Creating ventilation

Effective passive solar building design not only insulates out unwanted heat load, but also generates ventilation to treat internal heat loads, and to create the diversity in conditions for individual occupant comfort.

Ventilation created by the natural air imbalances around buildings creates internal throughflow of cool air tracking across.

Ventilation by thermal convection: Creating hot northern external spaces (sunken, hard paved areas clear of vegetation) and cool southern spaces (landscaped pergola covered areas) leads to the existing air pressure difference being enhanced. Opening windows across the building then leads to a cooling ventilation flow across the building.

This effect is maximised of course where other passive solar factors are already in place; notably the correct solar orientation of the building, and its internal layout suiting cross flow ventilation.

Wind generated ventilation: In the northern hot summer wind weather

'Micro-climate design begins with the attitude that weather is not a problem to be conquered by technology; rather that it is a force to be incorporated in building design to achieve comfort.'

conditions, the air is hot and imbedded with dust. Opening windows for ventilation is therefore undesirable. This can be overcome by incorporating the passive solar capabilities from wind generated pressure imbalances. The inclusion of roof vents situated in the downwind roof area where the air pressure is low allows air to be drawn out from the building. The cool southern side air can then be drawn in by the opening of downwind side windows.

Subsidence ventilation: In dry climate regimes, the addition of moisture at high level creates cool downwash ventilation through the subsidence of the heavier moisture laden air. This can be integrated with the two effects above to maximise ventilation to eject internal heat load.

Incorporating the three examples above results in a distinctly different built form to that encouraged under normal passive solar principles. This design approach neither depends on nor obviates passive solar building envelope features. Instead, it encourages additionally the creation of deliberate hot spaces, cool spaces and moisture changes as part of the building design consistent with micro-climate principles.

Despite superficial appearances, there is no basic conflict between these approaches. Rather, each is applied in the most appropriate method to suit each individual project.

There is, however, no single design style which emanates from this passive solar approach. Building design has to respond to the modifications to the micro-climate of existing site features. As a result, every design problem is

unique, has to be thought through from first principles. Not only do individual solutions vary from each other; but also each elevation of a building, by responding to its climate situation, is quite different.

Micro-climate

Micro-climate is influenced by existing broad-scale land features. For example, water features including coastline, estuarine, lake and river areas can create 'sea breeze' winds to varying degrees. Coastal features can generate sea breezes at regular afternoon times, extending up to 150 kilometres inland.

Every site also has its own features: landform, geology, landscape, vegetation, aspect and so on. These alter the sun access, wind direction and strength, and temperature variation from those of the prevailing regional climatic conditions.

Vegetation forms a significant local climate modifier, engendering changes to the landscape form, density, colour, humidity and creating spaces for warm air to shelter from wind, and cool air to be stored. Geology affects micro-climate insofar as the ground is a heat sink — rock formations close to the surface absorb a greater heat rate; sand arrayed in drifts traps heat.

Where appropriate features do not exist to be reinforced by the intended building design, features can sometimes be created. These include mounds, water features, new landscape layouts and elements of the building itself to integrate with the site — wing walls, verandahs and so on.

Since modification of the site will occur in any case by the placing of a

building, micro-climate design means appreciating this and maximising the comfort potential thereof.

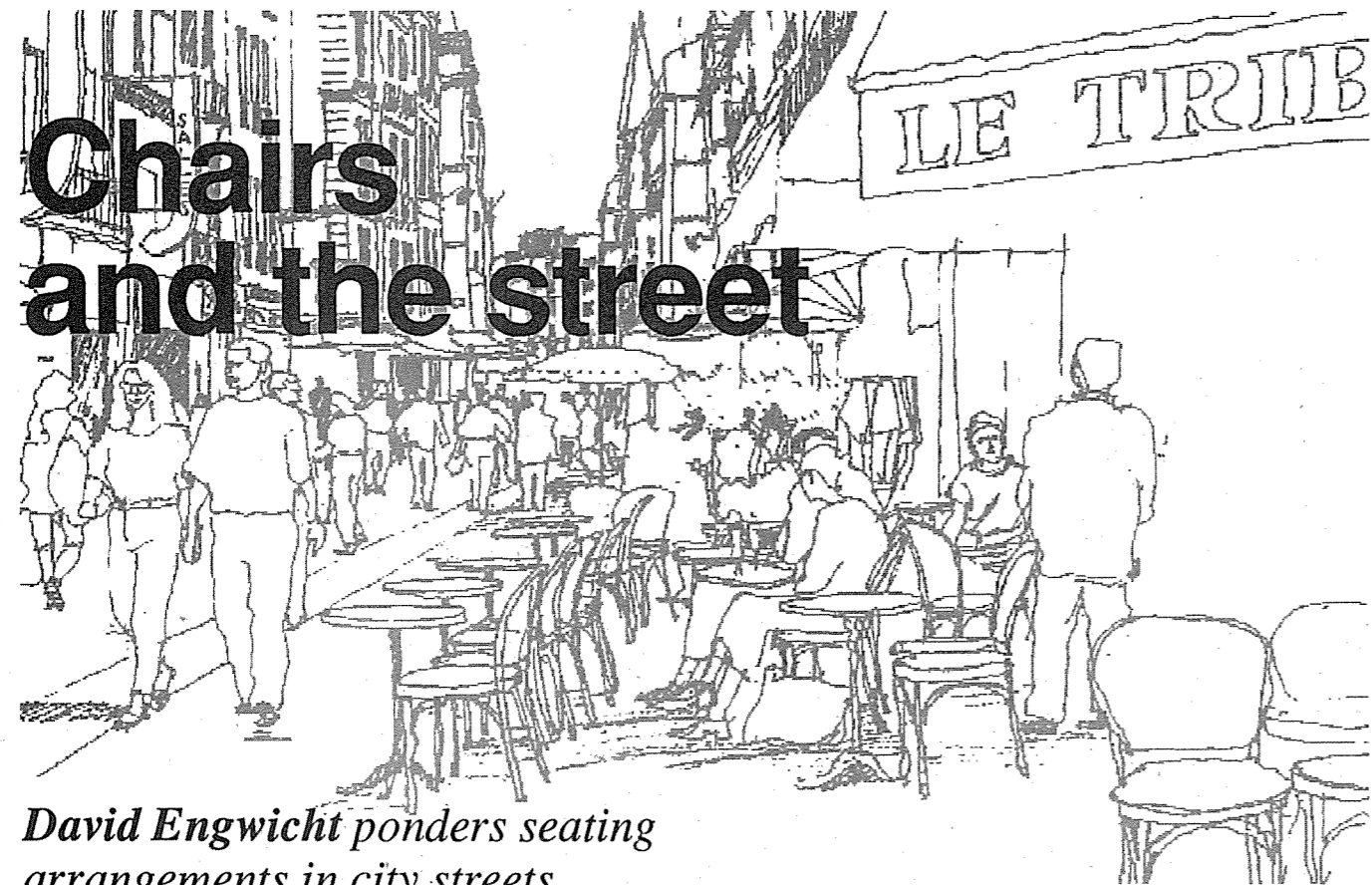
Comfort principles

We also need to reconsider what we mean by 'comfort'. Comfort is not measured by achieving fixed temperature and humidity ranges in the living space. In fully automated environments, such fixed limits lead to the sense of discomfort by users depending on whether they are sedentary (feeling cold), active or formally dressed (feeling warm), or spend long time periods in the space (feeling 'stuffy'). Fully air-conditioned spaces also recirculate minor and major illnesses (such as Legionnaires disease).

In environments created in accordance with micro-climate and passive solar principles, only a portion of the space may be comfortable. For example, in hot weather conditions, only the areas with windows adjacent to exterior cool may be fully comfortable. Occupants become interactive users of the built form, using window openings, curtains and other changeable features to maximise comfort.

Combining various microclimate elements in comprehensive design leads to a built form which creates comfort with minimum energy expenditure. When occupants interact with such building features, they can achieve comfort and control in ways which the fully automated built environment cannot offer.

Emilis Prelgauskas is an architect from Adelaide.



Chairs and the street

David Engwicht ponders seating arrangements in city streets.

FOR ME, the scene above of a Paris street provided the first key to unlocking a concept of 'ecocity' — and the essential role of chaos in building a sustainable city.

In Australia I had been used to seeing seats at outdoor cafes clustered around the table, but here, for the first time, I saw seats in straight lines, all facing out, like seats in a theatre.

What are these people really doing as they look at the faces of those walking past? They are mostly watching the drama of life played out in the faces of the passing parade. They are trying to read the stories etched into the faces. The clues to the story line lay in the eyes, the posture, the gait, the mannerisms and dress. Some of the stories are simple one act plays. Others, sagas of tragedy and triumph.

How accurate are these imagined real-life dramas? It matters little. This is an exercise in people summoning up from the dark cellars the triumphs and tragedies of their own journey. It is a process that puts them in contact with

their own history; connecting them to their own past. It is a way of clarifying their own dreams for the future; a therapeutic exercise which promotes emotional, psychological and spiritual well being.

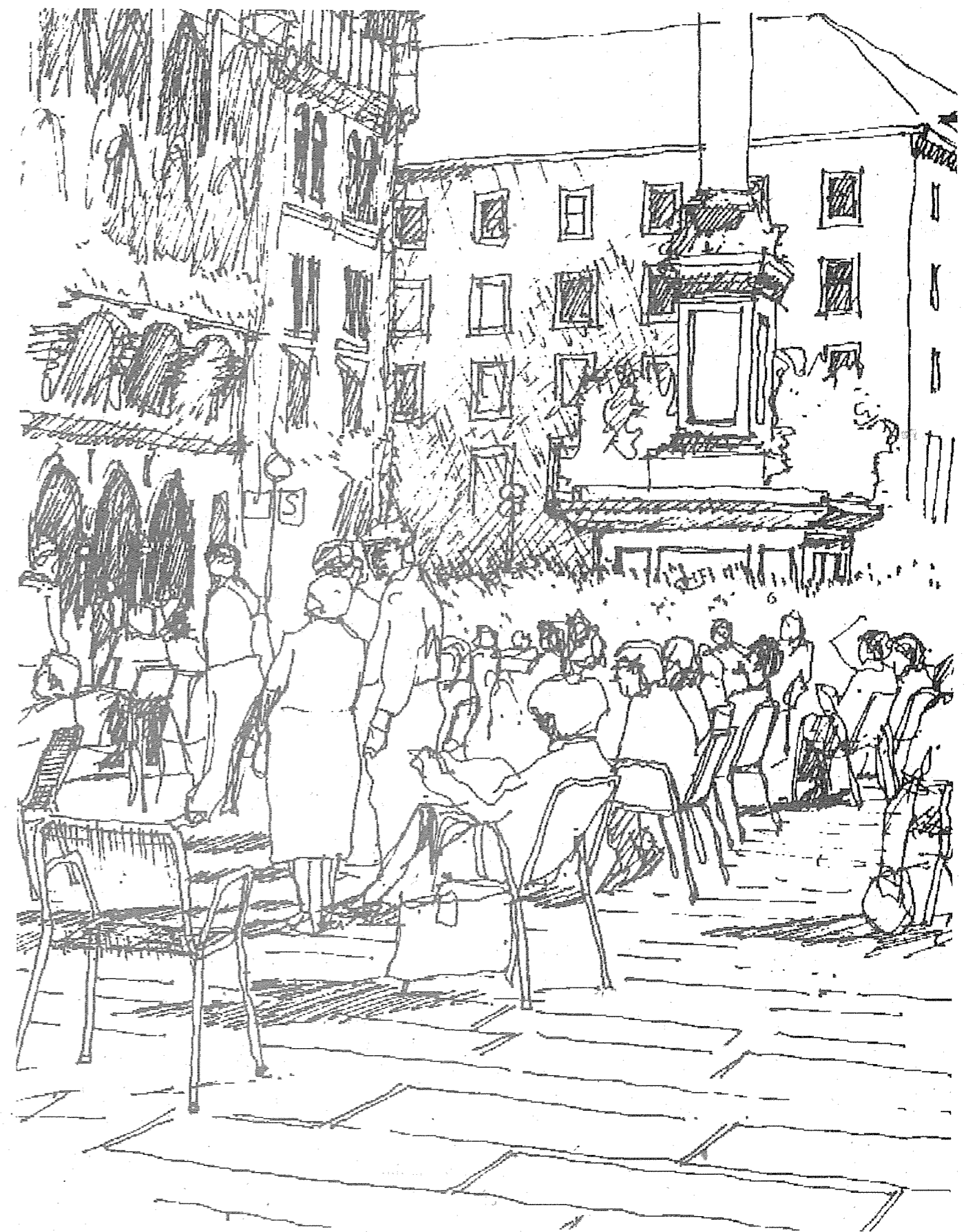
By glimpsing this unseen exchange that is taking place between those on the seat and those on the street, we also catch a glimpse of the true meaning of the ecocity.

Cities were invented to facilitate exchange. Exchange of information, friendship, material goods, culture, knowledge, insight, skills. Also the exchange of emotional, psychological and spiritual support. This exchange is impossible if people are scattered all over the countryside and don't have access to these exchange opportunities. That is why we build cities. Cities are a concentration of people and structures that enable mutual exchange to take place while minimising the amount of travel needed to access these exchange opportunities.

But why do people desire access to this rich diversity of exchange opportunities? The answer is obvious. For their survival and for their growth and enrichment as human beings. Cities are a recognition that if we are to grow into our fullest potential, then we need what other people can give us.

The city is therefore a people-made ecosystem created for mutual enrichment. In an ecosystem such as a rainforest, everything is inter-related and inter-dependent. Each organism provides something which is essential for the life of other organisms and, in return, receives from other organisms those things essential for their own survival and well-being. Similarly the city is an ecosystem where through mutual exchange (in both giving and receiving) we are nurtured and mature.

The next phase of my learning about the role of chaos in the ecocity came from looking at the chairs in the Munich square (right). What struck me was that they were not nailed down. One thing is obvious: the space looks



chaotic. Where is the guiding hand of a planner to bring order. There is no design, no straight lines, no symmetrical shapes; just chaos.

It reminds you of nature. In nature you never see trees growing in a neat row or laid out in symmetrical designs. Like nature this space is constantly changing, moving, and surprising. Chaotic yet brimming with life and creative energy.

Mechanistic thinking hates disorder and diversity. Yet nature is full of it. In fact, both chaos and diversity are essential to the very survival of nature. It is from bio diversity — the genetic pool — that new breeds and new life forms emerge which are able to survive a changing environment.

Chaos allows for the chance meeting of two previously unconnected elements which could not have met in a totally ordered world. When these two elements enter a relationship, the unpredictable may happen.

This combination of chaos and diversity is also involved in creative thinking. The brain allows unrelated ideas to bounce off each other in a pool of chaos. Every now and then a connection is made between previously unrelated ideas and a creative thought is born which bears little or no resemblance to the original component parts. Diversity provides the pool of ideas, chaos the chance for them to meet. Both chaos and diversity are essential to life and therefore are inseparable from sustainability.

Mono-cultures, single crop farms, are inherently unstable. They must be sustained from outside with massive supplies of fertiliser, water and pesticides. Ironically the farmer is fighting against nature trying to reassert its diversity. For nature, chaos and diversity are its life link to the future.

Could it be that those in the Western World are yet to learn, like nature, that their survival depends on social and cultural diversity and their tolerance of some chaos? Segregated, regimented, mono-cultural cities are socially, and in the long term economically, unsustainable.

Therefore, in the chaotic order of the Munich chairs we can discern the

opportunity for new levels of creative life to emerge. These chairs invite, almost command, people to exercise their creative freedom. 'Move me or leave me where the last person left me. You make a choice. But whatever you choose, for this moment you will participate in creating the unfolding drama of this square.'

Jan Tanghe, in *Living Cities*, (Pergamon Press, Oxford, 1984), says:

It has all too often slipped our minds that a sense of fun and a large measure of irrationality can be as meaningful as the development of knowledge. The structures of attractive cities is sometimes very irrational by modern standards of efficient and rational planning, but the true values in life often seem to stem from the unforeseen and the unplanned. The best cities are like the best parties; nobody planned them in advance and that is why they are so successful.

The tragedy of many modern, western cities is that they have become mono-cultural. By mono-cultural I do not mean that they do not contain many cultures, but that these cultures have been segregated and fenced off from each other much as farmers may segregate their crops into a field of corn, a field of beans and a field of tomatoes.

Suburbs are created for certain socio-economic groupings. Admission to the next 'higher' area is governed by earning capacity. To cap it off a 'privacy box' has been invented which can spirit people from the privacy of their mono-cultural home to their mono-cultural workplace.

This fencing goes further. Our senior citizens are locked in old-age homes where they socialise with people of their own age. Or even worse, their socialising space having been stolen for car movement, they are left stranded alone in their own homes. To ease society's social conscience they are given a senior citizen's bus to take them to a senior citizen's hall once a week.

Such a mono-cultural existence impoverishes all those in the city. One of the lessons learnt from chairs is the importance of what may be considered the most insignificant elements in a ecosystem. A chair looks dispensable.

Yet chairs are silent sentinels to the creative thoughts that were forged as people reclined upon them: scientific breakthroughs, songs written, solutions found, friendships forged, resolutions made and self respect reclaimed. All these experiences have enriched the city, therefore the chair has played a significant part in making great cities what they are.

Similarly we know the importance of the smallest element in other ecosystems. Remove one micro-organism from the soil in a rainforest and you may upset the entire balance of the ecosystem and threaten its very survival.

The segregation of those who are elderly, young, disabled, poor or from a different ethnic background is not so much to their detriment, but to society's. These people have gifts to enrich the lives of others and society is the poorer for not having them. These gifts may not always be comfortable. Often they challenge prejudices and assumptions. They throw a comfortable world into chaos. But as I have already suggested, it is chaos which provides the opportunity for worlds to clash, new relationships to form and higher life forms to evolve. Such experiences are an essential part of the maturing and growing process.

This is also why it is essential we have eccentrics in our society. By definition an eccentric does not represent the status quo; they are 'off centre'. They are the disturbers of our peace and their role is indispensable. Every eccentric carries the potential future of the planet within them. Maybe the ideas or insights have already formed in the chaos of their mind. Or perhaps their world, colliding with ours, may form a relationship from which new life emerges.

This is an edited introduction to a longer paper, to be presented at EcoCity 2, in which David Engwicht explores the consequences of chaos theory for traffic planning. As a campaigner for Citizens Advocating Responsible Transportation (CART), David has spent a lot of time considering the tradeoff between cars and people.

CRISIS IN THE MEGACITIES: The case of Bangkok

The environment and social crises that face cities worldwide are occurring in Thailand's capital at a greater pace than anywhere else. We have much to learn from the problems and responses of Bangkok's residents, argues Charles A. Setchell.

IN THE waning years of the 20th century the concentration of people in the world's cities is occurring almost exclusively in developing countries. Urban population growth in those countries will be so substantial that the equivalent of a city roughly twice the size of Melbourne will be added to their urban growth totals for every month of every year of this decade.

Not only is urban growth soaring in developing countries, but the number of very large cities — those cities of over four million people, often known as megacities — is growing rapidly as well. The growth of cities of all sizes, largely through migration, natural increase and jurisdictional expansion, has been accompanied by the urbanisation of both poverty and environmental degradation. While definitions of poverty vary widely, the trend is clear: our image of rural-based, 'Third World' poverty will become obsolete sometime in 1995, when the number of poor urban households living in absolute poverty will exceed those living in rural areas.

Our rural-based notions of environmental degradation in developing countries — rainforest destruction, for example — may be in need of some revision as well. Cities, where more than half of humanity will be living by the end of the century, are generators of enormous amounts of human and

industrial wastes of various kinds. This diverse waste stream is largely untreated when disposed, thereby generating severe and widespread environmental damage to ecological systems in urban regions.

The Bangkok Urban Region (BUR), with over nine million people, is now the fifteenth largest megacity in the world, and could grow to 14 million in the coming years. Like most megacities, the BUR is the most important city in the country, and serves as the centre of society, culture, education, government, politics and commerce, as well as Thailand's gateway to the world. Because of these features, the BUR, like many other megacities, is the national citadel of expertise, resources and innovative technologies and ideas, as well as the power to initiate bold approaches to long-standing problems. Megacities like Bangkok, then, possess the potential for realising the goal of 'environmentally-friendly' urban development.

Unlike any other city, however, the BUR is also the hub of the world's fastest growing national economy. This rapid growth, however, has severely exacerbated a range of problems that had existed for many years prior to the boom, particularly the lack of institutions capable of producing effective urban development policies and adequate public services.

Haphazard growth

Rapid demographic and economic growth over the last few decades, and particularly the past few years, has had a dramatic impact on the landscape. Land devoted to urban uses expanded from roughly 470 square kilometres in 1974 to the current estimate of 1600 square kilometres.

The economic boom has transformed the BUR into a series of construction sites linked by an increasingly clogged road system. Construction cranes have taken roost throughout the metropolis, with no discernible pattern. As a consequence, it is not uncommon to see high-rises being built in low-density residential areas and along quiet *sois* (lanes), further exacerbating already abysmal traffic and service conditions.

The current, haphazard form of urban development can be explained, in part, because Bangkok may be the largest megacity in the world without an officially adopted urban development plan, or an urban planning ethic or institutionalised urban planning process. While plans have been prepared and proposed in the past, none have been formally adopted as the Government's official 'statement' regarding Bangkok's future.

The BUR of today, then, has the appearance of capitalism run amuck.

Needless to say, people today would be hard pressed to recall an earlier time when there may have been a basis for envisioning the Bangkok promoted in a 1927 government brochure: 'a vast well laid out, park-like town intersected with a network of broad shady roads.'

A city stuck in traffic

Transportation is currently the most widely-debated development issue in Bangkok, simply because traffic congestion affects everyone. For example, the newest craze on Bangkok's airwaves is a 24-hour call-in radio show where nothing else is discussed but the sorry state of transportation.

The radio show's popularity is easily explained, for Bangkok has become a city stuck in traffic, with daily commuters now more like 4-5 hour ordeals. It is becoming increasingly difficult to identify commuting periods, as congestion now exists during all daylight hours, and into the night during workdays.

Bangkok's traffic conditions are now perhaps the worst of any large urban area in the world, and have deteriorated rapidly in recent years. In 1989, the average travel speed on most major roads in the Bangkok metropolis was 8.1 kilometres per hour (kph) during the peak hours, and has slowed since then.



Future projections are even more ominous. By 2006, the number of private vehicles may increase by four times the 1991 level. While the number of motor vehicles increased by 250 per cent during the 1978-1988 period, the only form of organised mass transit currently available in the Bangkok metro area — the buses owned or franchised by the Bangkok Mass Transit Authority — increased by just 6.7 per cent.

Current transport policies have limited potential to ameliorate prevailing conditions, let alone solve traffic problems or begin the process of fashioning a sustainable transport system. Seven major transport projects, including three rail mass transit systems, have been proposed as 'solutions' to the traffic nightmare, at a cost approaching US\$15-20 billion.

The most comprehensive study of BUR transportation conditions to date found that even with no constraints to funding, average travel speeds on main roads would only improve to 8.2 kph by the year 2006. Increased private vehicle use and population growth would all but eliminate the benefits gained from unlimited expenditures on transport projects. Recent contract signings and budget constraints suggest strongly that average travel speed will decline to about 5.7 kph by the year 2006, only a bit better than the estimated 4.8 kph if no improvements are made to the existing transport system.

Idling in Bangkok traffic is becoming an issue of national consequence, for this unproductive activity wastes a lot of energy. The traffic congestion of Thai cities has become a major drain on the national economy. In the Bangkok metropolis alone, traffic congestion has gotten so bad that the cost of wasted fuel while idling in traffic is estimated at between US\$500 million and US\$2.92 billion per year.

Thailand also pays another cost for its transport nightmare. Motor vehicle emissions currently account for 60-70 per cent of all air pollution in the BUR. In addition to contributing to various atmospheric problems, vehicle emission and other air pollutant levels were found to be dangerous to human health every day of 1989, based on studies

conducted by Thailand's National Environmental Board. Another 1989 study found that approximately 900,000 BUR residents — more than 10 per cent of the total population — suffered from respiratory illnesses due to air pollution. Bangkok's young children now have among the highest blood lead levels in the world, even exceeding the levels found among the children of Mexico City, long thought to be the city with the worst air pollution in the world.

The sinking metropolis

A 1990 study by the Asian Institute of Technology found that metropolitan Bangkok has sunk 1.6 metres since 1960. In addition to costly flood control projects, flood cleanup costs, and lost economic activity, other costs associated with subsidence include repairs to damaged building foundations, roads, sidewalks, and underground utility lines.

Nearly all of the subsidence was caused by the widespread use of groundwater pumping as a water source for the rapidly expanding population and industrial base. Another major impact of this activity has been the intrusion of saltwater into freshwater aquifers further and further inland, which is beginning to have an adverse economic impact on agricultural activities adjacent to the Bangkok area. While regulations to reduce groundwater pumping were adopted in 1988, the practice continues.

Bangkok's canals, known locally as *klongs*, once formed the main transportation network of the city, and served as the basis for the city's early 20th century nickname of 'Venice of the East.' Those canals that remain, along with other waterways, now receive all manner of untreated industrial and residential pollutants. With only two per cent of Bangkok's population connected to (poorly managed) sewer systems, the water now has both the look and consistency of printer's ink.

The Chao Phraya River, which nearly bisects the BUR north-south, typically has a level of dissolved oxygen (a measure of the 'ability' of water to support life and destroy organic pollutants)

of nearly zero. Elderly residents of the BUR recall once-bountiful fish and shellfish harvests in what are now near-toxic waters. A sewerage and treatment plant project worth more than US\$800 million has been proposed, but any amelioration of current water pollution levels is years off.

The Bangkok Metropolitan Authority (BMA) is burdened with the task of collecting and disposing of roughly 4.5 million tons of garbage per day. But the agency only has the capacity to deal with roughly 55 per cent of that amount, which is a higher level than is collected in most megacities, and is much higher than in previous years. Indeed, the improvement in garbage collection service is a notable — and welcomed — success story.

While the battle to collect garbage is being won, the treatment and disposal of it is still a major problem. Some innovative waste reduction and recycling programs have been initiated to cope with the task, but most observers give the programs poor reviews.

There are over 50 agencies involved in some aspect of urban planning and management in the BUR, with no one agency having overall responsibility and authority to act on the wide range of complex development issues. With so many actors, and overlapping mandates, it is extremely difficult to coordinate efforts or enforce regulations, which acts to undermine initiatives to improve living and environmental conditions. The sharing of power among so many agencies makes the BUR an excellent example of functional decentralisation run amuck. With conflicts aplenty, it's easy to understand why it's so hard to manage Bangkok.

The costs of growth

The economic, social, and environmental costs of rapid, unplanned urban growth outlined above are now becoming more widely recognised in the BUR. Given the importance of the BUR to the functioning of Thailand, the current trends constitute nothing less than a threat to the entire country. And resource limits can no longer be used as an excuse to defer meaningful action, for the Government currently has a budget surplus and international



reserves totalling roughly US\$27 billion, which could fund a host of needed urban development programs.

At the same time that the country is being promoted by economists and others as the next 'Newly Industrialising Economy', the exhaustive effort to achieve and sustain this status may well be squandered if a corresponding effort to manage the consequences of rapid growth is not forthcoming in the very near future.

The emerging transformation from an agrarian to industrialising economy is rapidly transforming Thailand's centre. The BUR's rapid, more capital-intensive form of urban development — towering high-rises and sprawling residential and industrial estate projects, at a scale previously unknown — will require more services, and greater coordination of activity, than ever before. This new form of urban development is thus even more dependent upon effective public sector action to sustain it than in prior years. An unprecedented government response thus appears necessary to manage economic growth in a manner that yields greater benefits for larger numbers of people, rather than greater costs for all. This response cannot rely on a continuation of past practices, for they have proven to be largely inadequate.

If past governmental practice cannot be relied upon, some hard choices will have to be made to change course. In this regard, some semblance of a silver lining emerged in the March elections for Governor of the BMA, in that one of the leading candidates was a noted

architect and urban planner, while another was a doctor extremely active in public health, air quality, and other environmental matters. Regardless of the number of coups, or even in spite of them, at least some Bangkok residents seem to be expressing a demand for change. It is up to the residents of the BUR, however, to provide positive lessons to others, rather than merely an accelerated version of what others are currently experiencing.

Worldwide, shelter, public services, transport and environmental shortcomings constitute a major part of the growing urban crisis, and pose a direct threat to long-term economic sustainability and urban environmental quality. Millions of people in the world's other megacities may benefit if something can be learned from current development trends and responses in the rapidly changing urban environment that is Bangkok, for changes are occurring there at a pace that is relatively greater than elsewhere.

Thai non-governmental organisations are emerging as a new voice for change, and are attempting to promote the improvement of urban conditions in Thailand. However, the degree to which their efforts are translated into effective policy responses during the next few years will largely determine whether the residents of the BUR and elsewhere enjoy the fruits of their labour, or merely absorb ever greater social costs and environmental degradation.

Charles A. Setchell is a Fulbright Research Scholar, Bangkok, Thailand.

Sustainable society: a radical view

The limits to growth argument has not been fully appreciated according to Ted Trainer. Only drastic change in thinking about lifestyles, patterns of settlement, economic systems and urban geography is capable of solving the major problems facing the globe. He suggests some examples of what a sustainable society could look like.

WITHIN most areas of the environment movement an important distinction has become evident between light and dark green. This is especially apparent with respect to urban problems. When the nature and magnitude of the global predicament is grasped it can be seen that most current literature and discussion about urban problems falls far short of adequate analysis and solutions.

By 'dark green' I am referring to the limits to growth view, which identifies the major problems as being due to the over-production, over-consumption and over-development of the rich countries. This 'greed and growth' syndrome is the basic cause of the environmental problem, the problem of Third World deprivation and poverty, resource depletion and a falling quality of life. Although literature for this argument has been accumulating for some 30 years, the limits to growth position is completely ignored. We have not yet reached the stage where there is a public debate between the pro-growth and the limits to growth positions. Such a debate is fundamental importance for people concerned about desirable settlements in general and cities in particular.

The now large literature on radical alternatives is saying that a *sustainable* society has to be characterised by:

- Non-affluence, and 'de-development'. It must be a materially simple way of life, although that does not imply doing without what is necessary for an entirely satisfactory quality of life. A sustainable society cannot be an affluent society.
- A high level of self-sufficiency, in all areas from household to national.
- Much cooperation.
- A zero-growth economy, operating at far lower levels of production, consumption and GNP per capita than we have now.

The key concept is the highly self-sufficient village. The only way we can achieve the above goals is by building towns and city suburbs in which people use local land, capital, talent and resources to produce for themselves most of the things they need. There is no possibility of keeping this society's amount of transportation — 8000 kilometres of road transport alone per person per year. This means far less imports into nations — Australia imports about \$2000 million worth of food every year. It also means the sort of home production we had a generation ago, for example, vegetable gar-

dens and chook pens in the back yard. Above all it means making towns and especially city suburbs into highly productive places.

We could extensively decentralise firms and work places, so that there are many small local firms accessible by bicycle or on foot. This would greatly reduce the need for cars. It should be noted that the alternative approach typically involves solving problems by eliminating the need for wasteful practices.

We could plant 'edible landscape' throughout our suburbs and cities. This is what has been done in the city of Davis, California. Market gardens and vineyards are included in housing developments and much public space has fruit trees. Some suburban areas there now produce more food than when they were underdeveloped.

We could relocate many market gardens in and close to cities. One of the most unsustainable aspects of consumer society is its agriculture, if only because soil nutrients are not recycled to the soil. A *sustainable* society must have localised agriculture so that food can be grown close to where it is eaten and all wastes returned to the soil. This can be done via methane digesters which can provide energy to run fridges and motors. Liquid nutrients from the

digesters can flow to local gardens, orchards, woodlots, ponds and fields. These designs assume much use of alternative technologies, especially solar passive housing, methane digesters for sewage recycling, and co-housing clusters using some shared facilities. (In one Danish co-housing development the need for washing machines was cut by about 95 per cent).

Is there enough land for urban agriculture? There is considerable evidence that cities could actually feed themselves. If we live more simply and thus require much less production, and if we decentralise most of the few factories we will need, we will then have much less need for the car. We can therefore dig up lots of roads, which currently take up 30 per cent or more of the land in most cities.

Various cities have Community Development Corporations, Community Land trusts, and Community Loan Funds, run by ordinary people who have come together to pool their capital in order to buy housing, farms or business for the community to own and control. These can be used to do many things that a developer would never do. Mostly they provide low cost housing. They can also provide community workshops, energy sources, public forests and orchards, and urban farms and dairies. When development is left to free enterprise and the profit motive there is no possibility of these things being established. These items of community property can be maintained by voluntary committees of ordinary citizens, building community solidarity and undercutting the need for professionals and bureaucrats. Services, such as care for old people, child minding, and maintenance of the library, can also be provided in these ways.

Some multi-million dollar enterprises of this form have been developed in the last decade. One recent conference in the USA was attended by representatives from 35 such community organisations.

Especially important will be our own town bank. At present any suburb possesses a considerable amount of capital in the form of savings, but these are probably all deposited in a branch of a large bank which lends little or none of

the capital for projects that will benefit that suburb. If we put our savings into our town bank and elect a board to decide what purposes they are to be invested in, those savings could be used to enrich our locality, including building facilities and funding low and non-profit businesses to which normal banks would not lend.

These community banks and properties will mostly be run by ordinary people, not professional administrators or politicians. We will have genuine participatory government, via elected committees, rosters and working bees, town meetings and referenda. Most of the things that concern us will be controllable by the members of the town or suburb because there will be small scale local systems for providing most services.

All this will produce leisure-rich neighbourhoods, greatly reducing the need to travel or otherwise consume for leisure. Community will be reinforced. There will surely be far fewer people lonely, dissatisfied and isolated, and therefore far lower costs in crime, alienation and personal or social breakdown.

Most people will only need to go to work in a factory or office to earn a monetary income for about one day a week, because most of their real economic activity will be in the large cashless sector of the new economy.

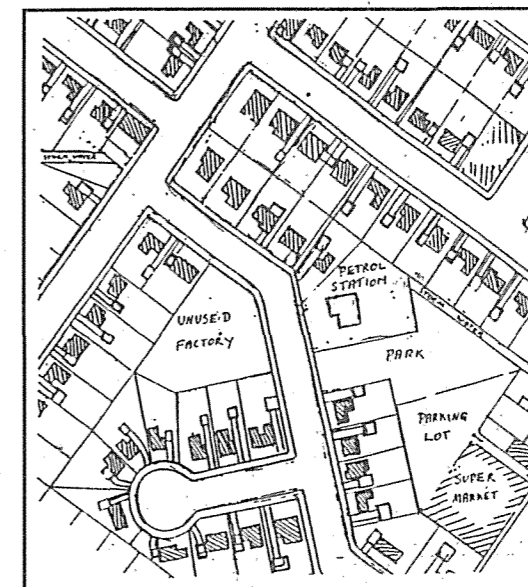
On a typical Israeli Kibbutz, a 90 year old example of many of the alternative ways advocated here, only about 5 per cent of the real income is in cash. This means one could spend five or six days a week work-playing around one's neighbourhood, doing a wide variety of interesting and useful things largely within one's own garden, co-ops, community projects, barter arrangements, and the working bees caring for the community property that will provide the many 'free' goods in the new economy, such as the free fruit, nuts, bamboo, berries and fish in the thriving edible landscape.

The area where there must be the most extensive change is the economy. It is not possible to design a *sustainable* economy that is driven by profit, market forces and growth.

There is considerable agreement about the general form of the new economy. Although the global predicament is essentially due to capitalism, the answer is obviously not socialism or communism as we have seen it, that is, where control is in the hands of a huge centralised state. The answer must be a 'Third Way' which takes the best of these two approaches but is basically quite different from either.

It must be an economy that just produces enough for comfort, convenience and security, without pressure for

A typical neighbourhood at present.



- The car takes up 30-40 per cent of the space
- Very little is produced locally: heavy importation of food, clothing, energy, water
- Wastes have to move out of the neighbourhood for it to work
- Not much community
- Much isolation, privacy
- No responsibility for running, maintaining the area
- Little or no property owned and run by the community
- Need for high cash incomes, in order to purchase
- A leisure desert
- Little or no barter, swapping of surpluses, or free goods
- No working bees or community work days.

growth in aggregate levels of production and consumption. Output of some specific things, such as cheap housing and solar panels, would grow for a long time but rich world GNP must be greatly reduced. The new economy will be primarily about achieving a high level of local economic self-sufficiency, therefore about small scale and diversity, minimising trade and foreign investment. There could be a great deal of free enterprise, in the form of many small owner-operated firms, carefully monitored and operating within definite limits (for example, no production of items agreed to be wasteful), so long as they were motivated mainly by the desire to be autonomous and to provide worthwhile community services, as distinct from the desire to grow or make profits.

The basic economic decisions would have to be made by democratic means, i.e. planned by the local community, via debates, committees and referenda. This variety of 'socialism' has a much better chance of working because communities will be small. On the Kibbutz all participate in votes on basic investment and development decisions. Much of the economy will be community owned and run, such as many of the energy sources, workshops, frames, houses, and businesses. Some would be co-ops. Most would be run by elected committees.

There would be a large cashless sector of the new economy, including the household economy, barter arrangements, gifts and mutual assistance (especially the giving away of surplus production and contributions to working bees and rosters), and the many free goods provided by communal edible landscapes, clay pits, ponds etc. The use of Local Employment and Trading Schemes would enable much trading and employment without any need for money. Non-market economic arrangements are important for social bonding; market transactions literally destroy social and community relations. We could still have extensive public transport, (some) mass production factories, state governments (much reduced in scale) and indeed a more extensive net-

work of universities and research facilities than we have now.

There is nothing in the foregoing account to imply that there need be any reduction in the standard of technology or medicine or in the sophistication of transport or communications devices etc. The point of the transition is primarily to liberate ourselves from the present amount of unnecessary production, so that there will be more technologists available to work on socially desirable projects. All the things mentioned in this sketch are being practiced around the world in some of the many communities pioneering these new, *sustainable* ways. There are abundant options for organising highly satisfactory communities that involve negligible resource and environmental costs.

On some NSW settlements people live well on less than \$50 per week expenditure, in houses that cost less than \$8000 to build on land that cost \$8000, paying little or nothing for water, energy or sewage services. What's more, a typical city suburb could be turned into a relatively *sustainable* settlement within a few years with little or no need for capital or technical innovation. At least 60,000 Australians are living in these ways at present. The problems are not technical; the alternatives exist, although intensive research and development in these areas is important. The problem is essentially to do with awareness, values and will.

The rural scene and the Third World

These basic principles apply to both the problem of over-developed cities and the catastrophe constituted by the rapid decay of rural life. In both cases sustainability has to be conceived primarily in terms of the development of highly self-sufficient villages linked by public transport and bicycle paths to each other and to (small) city centres.

There is little future for farming families or country towns within the present economy. They are not needed. All production can come from a few capital and energy intensive agribusiness corporations. If any rural life is to be preserved this will only be because deliberate action has been taken con-

trary to market forces and the dictates of the growth economy. The design and construction of appropriate towns and their surroundings is a relatively simple matter. The Crystal Waters Permaculture village in southern Queensland could become an impressive example of what is needed. Given that many framers are now unable to make a satisfactory living it should not be difficult to organise the establishment of large numbers of small towns throughout the countryside, in which people can live in ways that are not only very low in non-renewable resource use and environmental impacts, but which facilitate the restoration of damaged lands. Settlements and agricultural activity can be confined to parts of a multiple occupancy and new settlers often put a lot of energy into re-planting native forest.

Similarly, the foregoing principles constitute the only plausible solution for the Third World. There is no possibility of satisfactory development being achieved via the present approach to development premised on industrialisation, exports, affluence and consumerism, economic growth and trickle down. The goal of development has to be radically re-defined towards the building of low but adequate material standards for all through highly self sufficient villages. There must be largely cooperatively organised forest-gardens, workshops, energy sources and small scale *sustainable* agriculture mostly for local consumption. The export of surpluses in order to pay for the import of a few necessities should be a minor concern.

Protection

None of these possibilities can be realised unless action is taken to oppose the powerful centralising tendencies at work in a basically free enterprise economy. It is very much in the interests of capital to break down regional barriers, centralise functions, and establish an integrated, unified global economy, because this maximises its access to resources. Hence the fate of localities, even nations, increasingly depends on what suits the few holders of capital. They will always invest in whatever maximises their global profits. Unless

the development of your town or region is largely protected from these forces then:

- local resources will not be available to your town, because they will be taken away by the superior purchasing power of the distant corporations.
- local savings will similarly go into banks and be borrowed by corporations and therefore taken away to invest somewhere else.
- hence the ventures that would have been of most value to the town will not be undertaken.

It should be apparent therefore that *sustainable* development clashes head on with the current mania for free markets and freedom of enterprise.

Cities

It should be stressed that this general pattern does not deny the importance of city centres and the traditional cultural functions they perform. There is no reason why major theatres, museums, universities and the (small, remnant) state governments can not remain within small and human scale city centres. These will have largely ceased to be major work sites requiring heavy daily traffic and goods inflow.

City centres and suburbs and possibly neighbourhood 'nodes' can be of relatively high population density, for example, combining shops, public transport interchanges, three storey accommodation (no lifts, greenhouses on the

top) all under the one roof. But the current discussion of the need for urban consolidation; has been misled by the problem of high car dependence and energy costs and the high service costs of blocks within sprawling Australian cities. The reduction of these costs by increasing density has to be balanced by the longterm need to increase the productive self-sufficiency of cities. Attention tends to have been given only to the problem of the city as a consuming system. Increasing density can greatly reduce the per capita resource consumption of a city but beyond a certain point this will undermine its capacity to accommodate the edible landscape and the small manufacturing industry that must be extensive if in the long term cities are to become *sustainable*.

It is very likely that within decades dwindling energy resources will make it impossible to continue anything like today's volume of transportation. Similarly, at this rate, within decades our soils are likely to have collapsed from a variety of factors, most obviously the non-return of nutrients. A *sustainable* society, including its cities, will therefore have to be based largely on local sources of food and other items. This will require space and will set severe limits to desirable levels of urban consolidation.

A sensibly integrated approach to the overall problem would involve assisting many people to move from cities to farms and country towns, thereby gener-

ating more space within cities. It might be thought that the alternative way outlined involves such very different values that the prospects for a large scale transition to it are quite implausible. What is easily overlooked here is that the new ways and values can be deeply rewarding. It is not as if we are required to give up consumer values without any consolation. The task is to help people in general to recognise that living simply in a supportive community, being able to provide well for oneself mainly through the exercise of craft skills, with lots of leisure time, in a thriving and secure landscape, can be far more satisfying than striving to get rich climbing the company ladder.

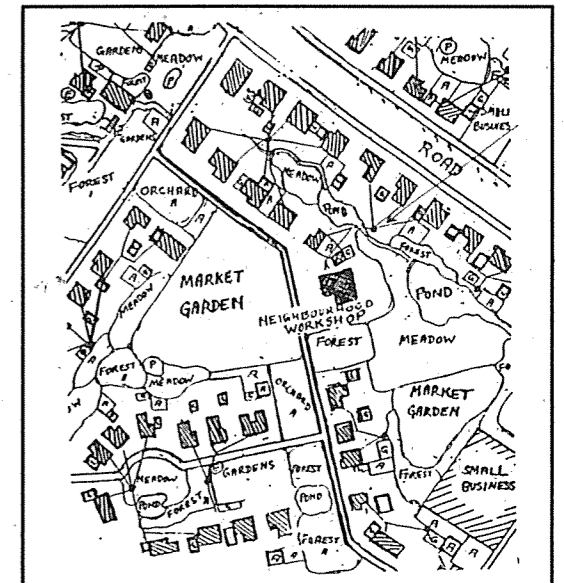
Especially for people concerned with the design of cities, the top priority should be to get these issues onto the agenda, both in the public arena and in the organisations in which we teach in and campaign

Most discussion of urban, environmental and related problems has not yet risen above the light green level. The fundamental and focal issue should be whether we can give a sensible account of a *sustainable* society if we assume continued pursuit of affluent living standards and economic growth, or whether we must face up to the transition to a radical conserver society.

Ted Trainer is a lecturer in the Social Work department of the University of NSW.

The new neighbourhood

- Many of the roads dug up and planted
- Most back fences pulled down
- Drains restored to landscaped creeks and ponds
- Derelict factory site has become a decentralised small firm
- Many small forests, meadows, ponds, orchards, vineyards, some private, some public
- Much property owned and run by the local community, including woodlots, orchards, workshops, housing, libraries
- Many energy sources, maintained by local committees
- Highly self-sufficient in food production, from backyards, local market gardens, and community sources such as orchards, woodlots, ponds
- A leisure-rich area
- A neighbourhood workshop on almost every block.



Pulling figures out of the air

IN MID 1991 the Federal Government's Ecologically Sustainable Development Transport Working Group criticised rail and electric light rail as producing too much carbon dioxide (CO₂). But this criticism was based on the Bureau of Transport and Communication Economics (BTCE) paper *Greenhouse Gas Emissions in Australian Transport* (Working Paper 1), and electric rail produces less emissions than those figures show.

1. Pick a gas. Choose carbon dioxide.

The greenhouse gases are water vapour, CO₂, methane, nitrous oxide, ozone and chlorofluorocarbons. In 1987-88, transport accounted for 26 per cent of all CO₂ emissions in Australia — about 15 per cent of all human-sourced greenhouse emissions. About 65 per cent of total transport CO₂ emissions comes from cars and light commercial vehicles, 17 per cent from trucks and other transport accounts for the rest.

CO₂ is relatively easily measured and calculated in emissions, and is a good basis for comparison between different transport modes.

Some forms of transport, such as petrol-fuelled vehicles, also produce nitrous oxides which contribute to the greenhouse effect, photochemical smog and other things. Electrically-powered vehicles produce emissions back at the power plant, and if the plant is coal-fired these emissions could include acid rain-producing sulphur dioxide.

2. Look at different sorts of energy used for transport

There are many factors to consider when calculating emission rates under different transport regimes. Firstly, different fuels have different thermal content, producing different amounts

of energy (megajoules) and different amounts of CO₂ for the same amount of energy. There are significant differences between fuels, and between varieties of some fuels, such as coal.

Fuel	grams CO ₂ per megajoule (MJ)
LPG	65.0
Petrol	71.2
Diesel	73.8
WA coal-fired electricity	282.0
NSW coal-fired electricity	265.0
Vic coal-fired electricity	414.0
Qld coal-fired electricity	287.0
SA coal-fired electricity	253.0

Emissions of carbon dioxide produced per unit of energy

The second factor is the efficiency of any conversion process before use. This applies to electricity, but petrol or diesel is already in its useful form. There are differences between States, and between fuel types. Lignite (brown coal) is the least efficient to burn, and gas allows the most efficient conversion.

Fuel	MJ per tonne
Vic brown coal	9.5
NSW elec. coal	23.5
Qld elec. coal	24.2
Qld/NSW high-grade coal	30.0
Diesel	45.6
Petrol	46.4
LPG	49.6
NW Shelf LNG	54.4

Energy available per tonne of fuel

3. Look at vehicle efficiency

There are also differences in the efficiency of conversion of a fuel to motion within an engine. Electricity is far more efficient. You can test this by putting a hand on an electric motor, and

on an internal combustion one. In a motor, energy converted to heat is energy lost. Electric trains are, however, generally bigger and heavier than buses.

4. Calculate vehicle CO₂ emissions per kilometre

The energy usefully consumed, and the emission from total energy use, depend on the type of fuel and the technology of conversion, including engine technology. When the engine efficiency is multiplied by the fuel emissions (using BTCE data), we get a figure for emissions per vehicle-kilometre.

Vehicle	grams CO ₂ per vehicle km
Sydney electric rail	1934.5
Sydney diesel bus	1298.9
Adelaide diesel rail	2708.5

Grams of CO₂ released by vehicle travelling one kilometre

5. Don't forget the passengers

We now have some idea of the comparison of emissions between empty vehicles, but different systems and different vehicles attract different numbers of people and we must consider actual loading efficiency. Newman & Kenworthy in 1980 developed data on the energy used to take one passenger

Vehicle	MJ per passenger kilometre
Sydney electric rail	0.30
Melbourne electric tram	0.44
Melbourne electric rail	0.57
Sydney diesel bus	1.40
Melbourne diesel bus	1.98
Adelaide diesel rail	1.73
BTCE 'rail'	1.60

Energy to take one passenger one kilometre

Greenhouse gas emissions may soon be used in determining transport policy, so actual figures are important. There has been criticism of electric rail but according to Dhanu River and Jeff Kenworthy it isn't too bad when it comes to releasing carbon dioxide.

one kilometre based on the number of passengers and vehicle efficiency.

Loading efficiency depends not only on the type of vehicle, and its attractiveness to the passenger, but also on the attractiveness of the entire system. Evidence from around the world shows that people prefer electric systems, and more people use them. However, an electric system still must be extensive and well integrated to pull in passengers. This is reflected in the figures.

6. Go back to the emissions

The best comparison of energy use between transport systems is in MJ per passenger-kilometre, and the proper figure for emissions is grams of carbon dioxide per passenger kilometre. We can do this using the BTCE figures on fuel emissions, and Newman & Kenworthy's actual figures on MJ/passenger-kilometre for different systems.

This clearly shows the differences in emissions depending on both the quality of fuel and efficiency of the electric conversion process, and even more so on the integration and attractiveness of the total system to passengers. Sydney's electric rail system produces the least greenhouse gases. Sydney's diesel bus system, the next best, produces 30 per cent more CO₂. Melbourne's performance is poor, both because the system is not as good, and because lignite is such a poor fuel

Source	grams CO ₂ per pass. km
Sydney electric rail	79.50
Melbourne electric tram	182.16
Melbourne electric rail	235.98
Sydney diesel bus	103.32
Adelaide diesel rail	127.67
Melbourne diesel bus	146.12

CO₂ emissions per passenger kilometre — public transport

in terms of thermal content, and hence more 'dirty' than coal from other States.

7. Average, simplify, compare

To produce an average figure for electric rail (which is inappropriate given such a large variation) requires an average of Sydney and Melbourne. While Sydney has good coal, and good passenger loading, our figures took a weighted average, on the basis of actual loading, of the emissions of Sydney's electric rail system, and Melbourne's electric rail. The result:

$$(0.72 \times 79.5) + (0.28 \times 235.98) = 123.3$$

We conservatively rounded up to 124 g CO₂/pass. km. This figure, based on BTCE emission figures and actual data on current systems and loading for Sydney and Melbourne, is still substantially lower than that of the BTCE.

Our figures put electric rail in the same range as diesel buses and considerably less than cars, when calculated on the most simplistic basis.

8. Consider other factors

Rail use results in fewer kilometres being travelled than with other vehicles. Analysis (based on 32 cities) suggests that this leverage factor worldwide is 3.6 to one, i.e. 3.6 passenger kilometres of car travel is replaced by one passenger kilometre on rail, and also results in significantly decreased emissions.

The structure of cities changes around rail-based transport, reducing infrastructure and energy use, therefore reducing emissions.

Finally, CO₂ emissions are not the only factor environmentally. Electric rail produces other emissions from power stations but experience elsewhere suggests that SO₂ and particulates can be controlled more easily from a large centralised source power plant, than can auto emissions

from millions of small sources. There are substantial externalities involved in producing fossil-fuel emissions in highly populated areas, both in terms of effects to health, and in terms of loss of ambience. This applies particularly to emissions from cars, and to other internal-combustion transport systems. All these factors should be considered in 'ecologically sustainable development'.

Vehicle	grams CO ₂ per pass. km
Car	190
Commercial Vehicles	278
Bus	120
Rail (Newman & Kenworthy)	124
Rail (BTCE)	150

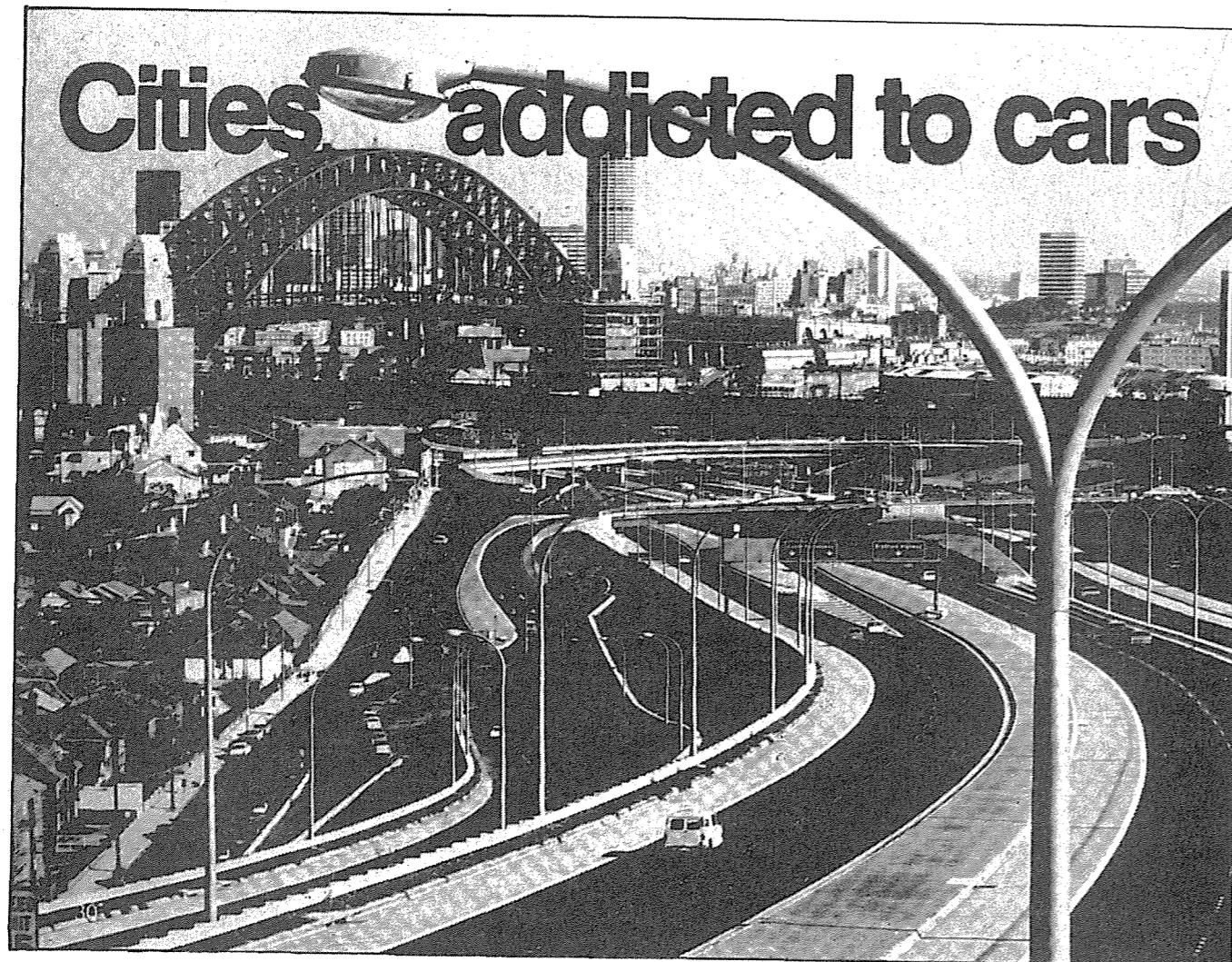
CO₂ emissions per passenger kilometre — all vehicles

More optimistic assumptions, e.g. improved electric rail vehicles; an extensive, integrated, rail-based system attaining loading levels at least as good as those current in Sydney; improved electricity generation, possibly based on higher thermal content fuel than lignite, would result in dramatic improvement in electric rail's emission figures. Thus our figure of 124 g CO₂ per passenger km is conservative, and the BTCE figure of 150 g cannot be justified.

References:

BTCE, *Greenhouse Gas Emissions in Australian Transport*, Transport Document Number 21, 23 May 1991.
P. Newman & J. Kenworthy, *Cities and Automobile Dependence: An International Sourcebook*, Gower Technical, Sydney, 1989.
P. Newman & J. Kenworthy, *Transport Energy Conservation Policies for Australian Cities*, Murdoch University Press, Murdoch, WA, 1990.

Dhanu River and Jeff Kenworthy are with the Institute for Science and Technology Policy, Murdoch University.



Cities addicted to cars

Cars create many problems in cities according to Peter Newman. He outlines three policy changes which should result in a reduction in car dependence and looks at trends in that direction in Australia.

ECOLOGICAL thinking is not just being aware of nature, it requires a way of thinking which is more organic, holistic or systems-based rather than reductionist or mono-cultural. In the urban context this requires looking at how the city sprawls like a cancer and builds in car dependence like an addiction. This paper looks at ways of reducing car dependence.

A reduction in car dominance and dependence would make cities more sustainable by: reducing smog and greenhouse gases from transport; reducing the sprawl of cities in rural and bushland areas;

reducing the physical, social and emotional damage from traffic in our cities; and, making our cities more people-oriented and less car-oriented.

The three most significant policy orientations needed to reduce car dependence in cities are to:

- Increase rail based transit. Rail systems need to be upgraded, extended and new lines built, particularly light rail with bus integration.
- Slow down traffic to facilitate pedestrian and bicycling activity through traffic calming. This humanising of streets can begin in

residential areas but must move to major arterials and eventually regions and the whole city. Traffic calming is both a set of physical road modification techniques and a community-based process for reclaiming streets.

- Increase densities by establishing urban villages near transit stations.
- These conclusions are derived from a study done by Newman and Kensworthy, *Cities and Automobile Dependence: An International Sourcebook* (1989), which was a compilation of data from 32 cities around the world.

Rail-based Transit

The 1980s saw some move towards rail transport in the car dominated United States and Australian cities. From a perspective where rail was seen as an outdated, inflexible and declining transport mode, many of these cities have moved towards upgrading, extending or building new rail services. This has been demanded by communities through the political process, rather than coming from transport professionals, who in general are dominated by road builders.

This trend has seen the emergence of light rail, in particular, as a flexible, cheaper transit option for many cities. In the 1970s many European and Canadian cities adopted light rail as the major new transit option and the 1980s also saw some west coast United States cities taking it on. Light rail is also now being considered in the United Kingdom and there are light rail plans in the Australian cities of Brisbane, Sydney, Melbourne and Perth.

It is questionable, however, whether the extent of change towards rail systems will be fast enough to take on the expansion of car use which is occurring in US and Australian cities, let alone reducing it overall. The resources provided for rail transit are still only a fraction of that going into road funding. However the 1980s has seen the end of total car-oriented planning in most car-dominated cities and a revival of interest in what rail can do for a more sustainable city.

Traffic Calming

The catalyst for communities to become involved in traffic calming has generally occurred in opposition to planned freeways. Instead of just opposing a major increase in traffic capacity for an area, communities have begun to propose constructive alternatives.

The reclaiming of streets for a more human orientation towards walking and bicycling and transit is a direct attempt to manage the impact of the car on our cities. The importance of traffic calming is that it is a set of techniques that offer something for local communities who up till now have been held to ransom by traffic engineers.

Traffic calming began in residential streets in European cities but has

moved into calming whole areas and focusing in particular on arterial roads. It can start in a small way with communities insisting on more human local streets and then moving to regional calming that takes on arterials and challenges the whole style of a city.

This approach is being taken by Portland, Oregon USA, which in 1991 began a 'Reclaim your street' program by providing assistance to communities on how traffic calming can be used and how they can be linked into the light rail system by extensions to the line.

Most car-based cities in the world have taken on traffic calming in local areas but few are as serious as Portland in taking on a more area-wide approach based on community input.

In European cities the early evidence from assessments of area-wide traffic calming is that there are:

- improvements in air quality and noise;
- considerably enhanced aesthetic appeal;
- enhanced community building opportunities; and,
- improved economic vitality of calmed shopping precincts.

This comes about by a combination of: reduced travel demand due to improved local facilities, for example, streets can become recreation areas; much more walking and cycling, and; more transit use.

Thus traffic calming has provided a key to a more sustainable city through providing the opportunity for communities to begin to choose a less car-dependent option rather than following the blind predictions of a road authority's computer.

In Australia each mainland State capital city has a freeway issue being actively pursued by community groups. For example:

Sydney — the F2 and F4 freeways through some of the best remnant bush in Sydney have led to some innovative light and heavy rail proposals and traffic calming; no political party however seems ready to adopt the new approach and leave aside car-based planning.

Melbourne — the Eastern freeway extension through highly significant remnant bush and creek land has led to new transit and calming options from community sources; the Government is sympathetic but has not yet been able to drop the Freeway in favour of rail and

traffic calming, and the Parliamentary Opposition is pledged to build it.

Brisbane — the much celebrated victory by Citizens Against Route 20 (CART) provides a model for community contribution to a more sustainable city; broad institutional control over the road planners seems to have proceeded further in Brisbane than anywhere else in Australia.

Adelaide — the city that prided itself in not having a freeway mentality has fallen into the traffic engineer's concrete and bitumen trap with a proposed North-South freeway, producing considerable community response.

Perth — the city with 180km of planned freeways is slowly losing the more outrageous ones such as Swan River Drive (along significant river wetlands), the Fremantle Western By-pass (through heritage areas) and the Fremantle Eastern By-pass (removing 100 houses); the latter has been the basis for a significant community response and a study on traffic calming and light rail for the city; the rest of Perth does, however, seem to remain firmly in the grip of road-based planning.

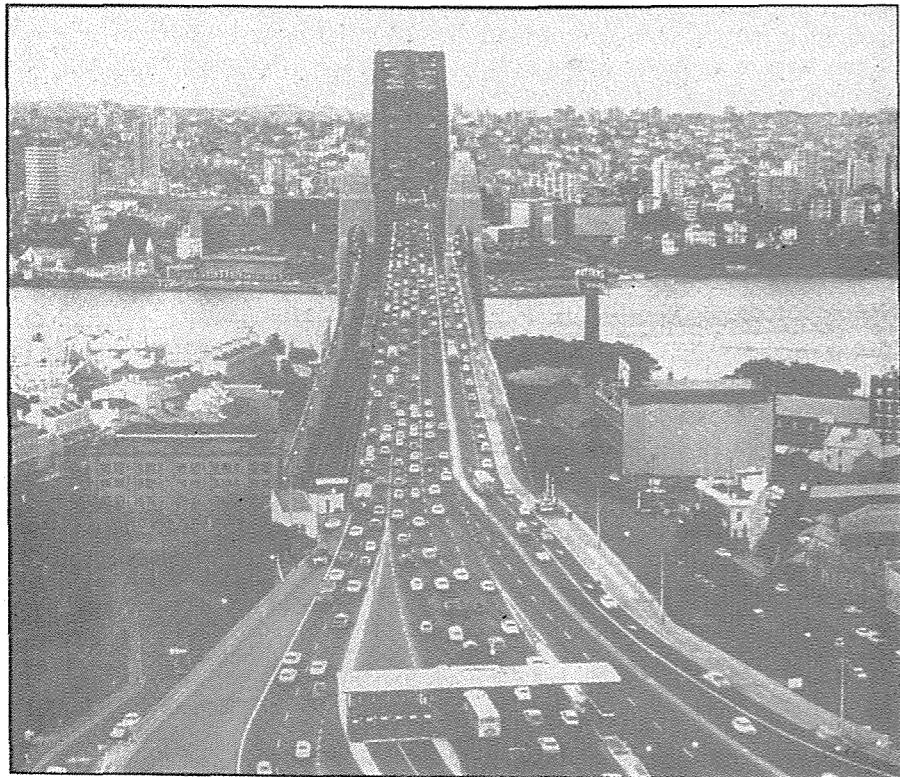
Urban Villages

The density of urban activity is crucial to lowering car dependence. There is a significant increase in car dependence under around 30 people per hectare of urban land.

This process of adding new houses to an area can be done sensitively but more often than not is leading to community resistance. Rather than abandoning the need for density increases, some communities have found ways of influencing their local council through the development of design guidelines for density increases (for example, the City of Bayswater in Perth). These can bring out heritage qualities and other local values.

The most productive way of achieving density increases is by building urban villages which are larger scale sites — 10 to 20 ha minimum. They can take an integrated high density mixed land use development which is a central design concept for sustainability as it facilitates greater local self-sufficiency, and thus shorter trips with more walking and biking.

The urban villages developed so far may not go as far as the innovative fully



integrated theoretical concepts, of Ecopolis or EcoCity, but they are a start in providing something that is more holistic, less car-dependent and more oriented to the urban commons than standard low density, privatised suburbia. They reach back to the roots of how cities first began with a mutual cooperation and sharing that enables diversity to be achieved in human activity. They provide a model for cities which have lost their way ecologically and socially because of a total orientation towards optimising life for private needs and neglecting the public good or urban commons. Urban villages have been built mostly in European cities but are increasingly on the agenda in the US, Canada and Australia.

In Australia the urban village concept has received a large boost through the Better Cities program which, in response to communities demanding fewer car-based options, has produced some innovative designs such as:

Brisbane — the Fortitude Valley urban village complete with light rail and the extended heavy rail line to the Gold Coast with urban villages planned for each of the new stations.

Sydney — the award winning Greenpeace design for the Pyrmont redevelopment is a model urban village

with light rail link to the city centre; also the St Mary's area (old defence land) has an integrated urban village concept together with a new transit link.

Melbourne — the Docklands redevelopment is an urban village based around walking, biking and tram access to the city centre, as is the new Better Cities development in South Melbourne.

Adelaide — an urban village is planned for the Mile End site together with a light rail link and the MFP concept proposes to incorporate a demonstration urban village.

Perth — a new light rail (public-private venture) for the Fremantle to Mandurah corridor is based around a series of urban villages; urban villages are planned for the Victoria Quay site in Fremantle and on redevelopment areas adjacent to the newly electrified heavy railway service to Armadale; the East Perth redevelopment is also being planned as an urban village.

Canberra — building on the Sustainable Canberra report, the ACF-based model, there is a large urban village concept for the Gunghalin corridor complete with a light rail. This is the most sophisticated large scale concept yet developed for an urban village in Australia.

Institutional change

Modern car-based cities are faced with huge problems of sustainability which demand a fundamental shift in the technology and value base of these cities. The beginnings of this change have been traced in this article through the moves towards: new electric rail-based transit technology, traffic calming and urban villages. Sufficient progress has been made to offer hope that automobile-dependence is beginning to be tackled.

Such hope can usually be traced to changes that have been forced or cajoled through local communities demanding an alternative to car-based options.

The action is now shifting to genuine demonstration projects which can offer even more substantial symbols of hope. There is an essential role for involvement of environmental groups and communities in these projects in ensuring that the visionary concepts are followed through and not watered down by bureaucracies, road lobby action and local fear of change.

Finally, as the demonstration phase in sustainable cities is passed through, there is a need also for institutional change. The present planning and transport institutions are so oriented to low density sprawl and car-based assumptions that the regulatory and financial subsidies of the system are virtually guaranteeing a non-sustainable future. Demonstration projects will stay as toys and do little to change the nature of cities unless institutional change begins. The powerful road and oil lobbies are quietly (and sometimes openly) supportive of the institutional *status quo*, though there is much more support for change in other parts of the private sector such as the real estate and construction industries.

Government agencies must begin to re-orient their structures to integrated transport and land use decision-making, and shift resources, both human and fiscal, into the organic, sustainable directions that are beginning to be demonstrated.

Peter Newman is Associate Professor in Environmental Science at Murdoch University and the Director of the Institute for Science and Technology Policy.

Clean and healthy ... dirty and happy

The vast problems of the modern United States city must be considered by planners and designers according to Randolph Hester and Laura Lawson. There are ways to help people see a future city that is clean enough to be healthy and dirty enough to be happy.

WE ROUTINELY see landscapes that bear no relation to the natural environment: rolling green lawns in the desert, networks of storm drains, levelled hills and filled marshes, tropical gardens in snow-bound regions. Replacing local vegetation with exotics dependent on chemical and environmental manipulation creates great misunderstandings in people's perceptions of their environment. Whether initially due to ideals of comfort, personal preference, or simply ignorance, such manipulations minimize our awareness of place.

How can such places empower people? Hard surfaces predominate, landforms are flattened and manipulated into a uniformity that lacks local character and natural idiosyncrasies, denying the diversity of ecosystems and communities, thereby isolating human participation from natural processes.

Separating ourselves from nature, we develop an attitude which reduces it to resource material. This environmental anonymity reduces land to a consumer item and creates catastrophic environmental crises. We transfer the blame onto some large, nebulous force without considering our own responsibility. We have lost our sense of stewardship towards the land that

guides sustainability. Aldo Leopold in *The Land Ethic* wrote words in 1949 which remain true today:

There is as yet no ethic dealing with man's relation to land and to the animals and plants which grow upon it. Land, like Odysseus' slave-girls, is still property. The land-relation is strictly economic, entailing privileges but not obligations.

Just as environmental anomie [*the state of alienation experienced as a result of the absence of social norms or values — Macquarie Dictionary*] is perpetuated in land-use practices, social disparity manifests itself in our manipulations of the environment. The increasing disparity between rich and poor is one of the greatest problems projected into land use and policy. In 1985, the bottom 5 per cent of the US population received approximately 5 per cent of the national income, while the top 5 per cent received 43 per cent. Areas of new development reveal a privileged class buying expensive homes in gated suburbs while leaving gaping holes in deserted cities.

Social disparity has many landscape dimensions, most clearly revealed in the creation of a largely private 'public' environment that allows segregation of

public life. The wealthy, having more control of their social environment, easily spend leisure time where they escape stressful human environments. Lower income people must obtain all their environmental needs from their immediate environment. The wealthy family isolates itself in a fortress of private property, complete with swimming pool, tennis courts, and recreation room, rendering the community centre obsolete. As people turn more to private oases, the real public environment is taken for granted and ignored.

Alienated from the public sphere through privatization of social spaces, people forfeit community. The potential for withdrawal increases with communication technologies, whereby human contact is not essential and the ability for public life and public action declines.

Problems today

Environmental anomie and social disparity are embodied in landscape design today. Uncompromising land use practices impact our lives, refusing to adjust to variations in lifestyle and environmental necessities. The low density suburb, suburbanized small town, throw away city, and plastic landscape will probably continue through inertia into the next century.

The low density suburb

The suburb is where population growth is occurring. It is characterized by low density: 4-6 units per acre for the middle class and 1 unit per 20 acres or more for élites. The suburb's positive image is of cleanliness, order, and security in a complex world. The negative image is of high environmental degradation, homogeneity, growing economic inaccessibility, and car dependency.

The suburb appears superficially to be environmentally healthy. Trees and vegetation have more space, less pavement, and less constant soil compaction. But all is not bliss for natural processes. Suburban sprawl claims forest and agricultural land, with cities such as Atlanta, Georgia, consuming 50 acres per day for suburban developments. The suburb is also increasingly unavailable as only 28 per cent of US families can afford the suburban dream. Many developments are being re-oriented from middle class to upper class homes.

Household size is also changing. While the US population increased 10 per cent from 1980 to 1989, the number of households rose 15 per cent simply from people forming smaller, non-traditional households, and average dwelling size increased, from 800 square feet in 1950 to nearly 2,000 in 1988.

The shift of business from central business districts to suburban business parks means only one in five commuters go to the city; most commute suburb to suburb routes which mass transit lines cannot efficiently serve. The majority of these new suburban employment centres are in predominantly white, upper-middle class areas, which means convenience for executives, but longer commutes with fewer mass transit options for clerical and service employees.

Suburbs are automobile-dominated, with over 35 per cent of land paved for streets and parking. This is wasteful of land and costly to the home buyer, with 24 per cent of total home cost dedicated to road, driveway and garage.

When 54 per cent of waking activities occur ten miles or more from the home, the responsiveness of the neighbourhood to residents' economic, social, and familial needs is questionable, with households isolated in communities of mass tract developments and linear shopping centres that require car transport for all needs. Alternatives to the car in low density suburbs are difficult, as they cannot be served by mass transit without commuter inconvenience and substantial subsidies.

Suburbanized small towns

There is a growing preference for small towns over suburbs. Positive images of towns include more complete, fulfilling downtowns, more neighbourly interactions with people, and a safer place to raise children. Master planned communities, new towns, and small town expansions 'leap frog' agricultural land at the urban edge, threatening the viability of farms and increasing the costs associated with freeways and connections. Rural towns becoming bedroom communities for commuters face increased cost of services, social tensions between newcomers and locals, gentrification, increased land values out-ricing locals and their children, and loss of rural character.

Future-oriented developments are re-evaluating small towns for insights on how to design successful new communities or they seek to optimize alternative transportation options, but they may, however, continue the suburban sprawl and low-density development occurring in urban periphery lands. While offering alternatives to the automobile, they maintain transportation dependency by remaining essentially bedroom communities.

The throw away city

Cities that were once industrial and financial centres have become sacrifice zones as people move to suburbs, exurbs, and small towns. As employment and population recede, those left behind often live in persistent and deepening poverty. Areas such as Northeast Brooklyn have hundreds of abandoned buildings and a population with median family income averages of 70 per cent less than the city median. Such disinvestment produces neglected landscapes, out of context, places to lurk, and places as decorative cover-up. For the majority of the population, the city has become an expendable item like other consumer goods.

The plastic landscape

Modern advances have given us extraordinary life-enhancing devices and conveniences, suitable for our near-religious belief in cleanliness, efficiency, and convenience. The manicured yard of lush grass and a few clean trees and shrubs symbolizes this manipulated landscape made possible only by the technological support of readily available water, dangerous chemicals, specialized equipment, and technical alteration of plant matter. The Environmental Protection Agency estimates 70 million pounds of chemicals per year are applied to lawns. We pay for pesticide dependency in 45,000 human poisonings yearly and countless deaths of birds, fish and microbial populations. 'Efficiency' is superficial; there are costs associated with technological dependencies.

Landscape becomes camouflage concealing the mechanization required to maintain our lifestyles. We enjoy the conveniences of modern life yet romanticize the technology of 'simpler' times. We hide powerlines while installing fake gas lights on our streets.

But, the plastic landscape is unsatisfying, as in Los Angeles when plastic trees installed for a street median were systematically vandalized and mocked until the city barred future use of plastic plants. When artificial tree manufacturers say their products are 'as good as nature', we have to ask ourselves what these imitations satisfy. Why do we not feel the same about a replica as we do about the original? We respond to natural elements emotionally and physically. Especially as natural environments become rarer and less accessible, they gain value and significance for us. Nature's idiosyncratic tendencies make each open space unique, satisfying our symbolic, social, and emotional needs.

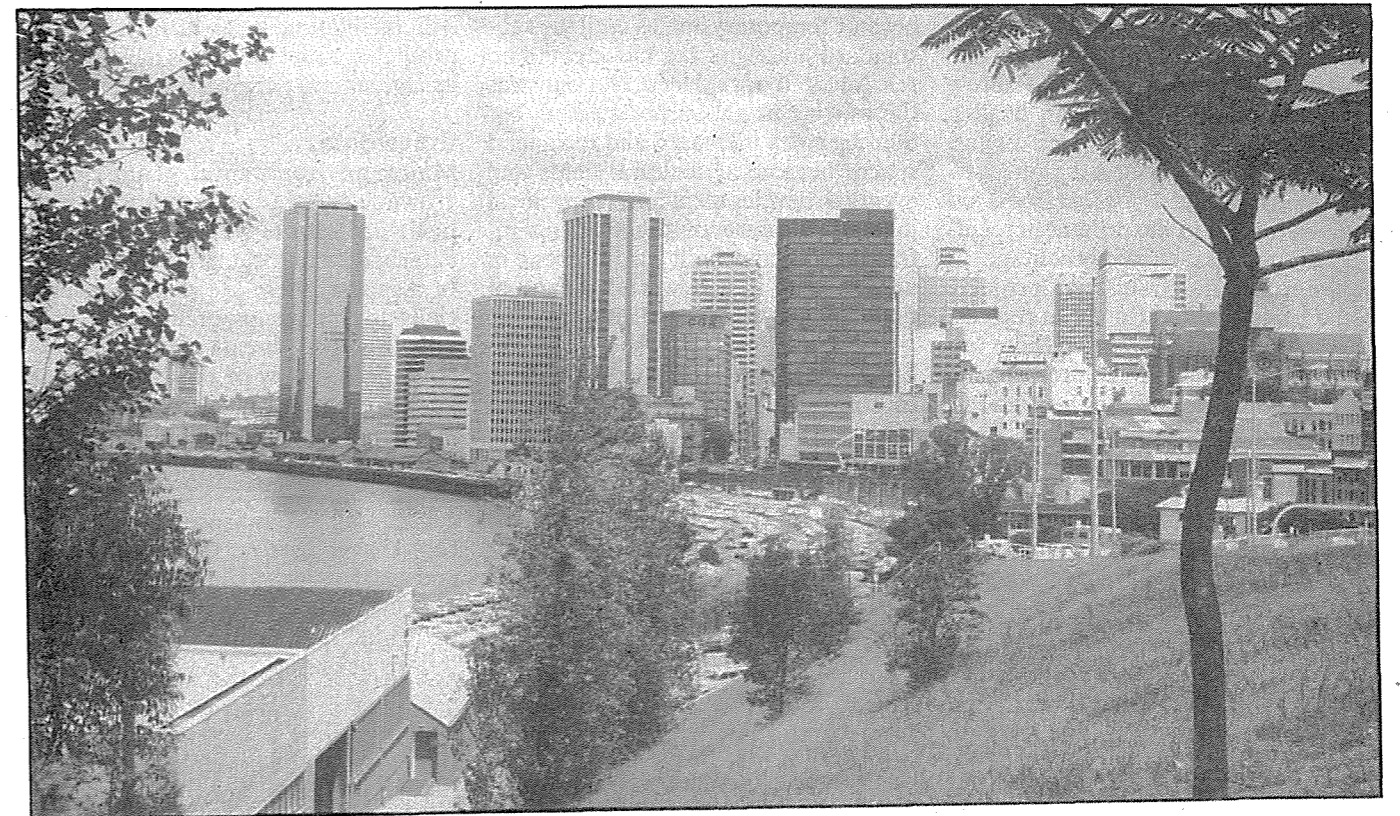
Counter trends

The low density suburb, suburbanized small town, throw away city, and plastic landscape are glimpses into cities in the 21st century on current trends but what that century will bring depends on our determination today. With these trends comes a powerful social counter-tendency in which some people modify their lifestyles to live more ecologically and community-oriented. The 'Enlightened Public' chooses smallness and voluntary inconvenience in neighbourhood matters for quality-of-life and environmental convictions, economics, and community facilitation. Individuals are acting, organizations are forming, and precedents are already in place. We offer vignettes of what a responsible city requires: density, working at home, appropriate technology, urban wilderness, urban land as economic resource, locally-grown, and grassroots organization.

Density

For the Enlightened Public, higher density is the key to saving land and relieving social pressure for centrally-located housing. This is already happening as townhouses and condominiums replace expensive detached single family houses as homes for young families, first-time buyers, and single people. House sizes diminish as people refuse the financial burden and house-keeping costs of over-scaled homes in remote locations and discover satisfying lifestyles in 400 (compared to 2000) square foot houses and apartments.

Such variation in housing types en-



courages diverse households, from single person to large families, to share neighborhood facilities and develop more integrated communities.

Working at Home

By carefully mixing houses, offices, industry and small-scale natural resource production, daily transportation time decreases giving ex-commuters time to discover and enjoy locally-produced items and services. A study of five Bay Area communities verified that people living in more dense, transit-rich areas of San Francisco drive one quarter as much as residents in sprawling suburbs around the Bay Area and the average household in a downtown neighborhood saves \$14,000 annually in auto costs. Doubling density reduces annual auto mileage 30 per cent per household.

Decreasing commuter miles creates new land use possibilities that sound utopian, yet are extremely feasible. As commuter miles decrease, streets can narrow, with the space retrieved for trees, mass transit corridors, and pedestrian amenities. Pedestrian and bicycle paths through urban forests and gardens offer daily opportunities to observe natural processes en-route to daily tasks. Highways narrow, and sound walls are replaced by linear

forests that mitigate noise levels and carbon dioxide emissions. In New York City, the Department of Transportation reclaims extra-wide and redundant streets and infrastructure in its Green Streets program to improve conditions for pedestrians, transforming streets into sidewalks, gardens, and play areas.

Appropriate technology

The Enlightened Public gets involved with natural processes and has a commitment to appropriate technologies and lifestyles that comply with environmental criteria. We proudly expose appropriate technology as an aesthetically-pleasing, integrated part of the whole landscape. The heating from solar orientation, the cooling properties of vegetation, the incorporation of erosion-control measures, the power of water and wind all create new urban patterns and become instinctual elements of daily community life.

Appropriate technologies such as passive solar heating and gray water systems make homes more self-reliant, without the environmental impacts of large systems. At the neighbourhood scale, local water retention ponds can take burdensome storm water drainage from centralized systems and recharge the local aquifers and water table,

reintroducing beautiful water features and animal habitat to cities.

As recycling becomes mainstream and even mandatory, it will be much more visible in neighbourhoods and homes. Polls report that 81 per cent of Americans now recycle at home, 46 per cent at work. The city of Seattle recycles 35 per cent of its waste through active programs in recycling education, compost bin distribution, latex paint recycling, wood waste recycling and waste reduction.

The urban wilderness

The search for unabstracted urban nature, the longing for natural processes, and the desire for a sense of place will combine to create large areas of wild nature as part of the city. Such spaces will create habitat, protect specified environments, or simply acknowledge the unofficial wild nature that has taken hold in parts of cities. Urban wilderness acknowledges human participation in natural systems and there will also be the psychological benefits associated with increased access to natural areas.

Over 400 citizens actively participated in the design of Runyon Canyon Park in Los Angeles, addressing issues of native plant restoration, homelessness, preservation, children's

needs, crime prevention, and property value in the process.

The redevelopment of the throw away city will often focus on healing previous ecological wounds. Productive forests that mitigate the urban heat island effect will likely be one required project. Similar to the present percentage for public art, a percentage of commercial and industrial projects could be earmarked for urban reforestation. In Portland, Oregon, there are already tree planting requirements as part of zoning and building regulations.

Derelict sites will be reclaimed as urban forests, gardens, and wildlands. In New York, 75 per cent of the city's community gardens and parks are on city-owned land that previously had been trash-filled vacant lots. Typically, local community groups concerned with sanitation quality and the appearance of their neighbourhood transform such abandoned land.

Urban land as economic resource

Many reclamation projects and wilderness areas will produce essential habitat, food, and fibre ready to be innovatively used by the 50 million poverty level Americans. Exploiting opportunities and unclaimed resources to achieve more self-reliance benefits all, from the doer's sense of autonomy to the society as recipient of services.

Designers and planners must take advantage of the economic resources of the environment in ecologically sound ways. One primary task is to discover resources that have not previously been utilized. In lower-economic communities, obvious resources have been typically exploited by outsiders, so it is the community designer's task to uncover hidden treasures to be utilized by the community directly. Natural resources like land, water, or scenic beauty, or cultural resources such as history or community idiosyncrasies can be exploited to revitalize and individualize community work.

Temporary housing for the homeless and dispossessed will be provided by rethinking density and reclaiming unused land. In Chavis Heights, Raleigh, North Carolina, for example, we were hired to prevent the clearance of a residential block by a redevelopment project. Utilizing the inner vacant land of the block, we initiated new housing in the interior of the block that

became temporary homes until the sub-standard houses of the block could be rehabilitated or replaced. Not only was the existing neighbourhood saved, but housing stock increased and reclaimed spaces became agricultural fields and eventual development providing local jobs. This reuse of the existing infrastructure and built environment in urban areas is a powerful means of defeating the throw away city.

Locally Grown

In some cases, natural systems and wilderness areas will be open to the public for harvesting, reminiscent of the public use of the New England Common. It is estimated that sufficient available unused space exists in cities to provide for up to thirty percent of all urban families' produce needs. A family of four can produce two thirds of its vegetables on a 600 square foot plot, with about five hours/week of labor input. Cities are well equipped for food production, with readily available water, nutrients and energy as well as quick access to market.

Through the Neighborhood Open Space Coalition in New York, many groups are able to develop neighbourhood parks and gardens to such an extent that as of 1984, New York had 448 community gardens, on 155 acres of land, built and tended by 11,171 people. Such gardens are examples of land use combating environmental anomie and social disparity simultaneously.

As awareness increases concerning the environmental and health impacts of food production technology small-scale and organic farm practices increase their viability within urban regions. Financial and political backing can make agriculture more accessible and integrated into urban life.

Once food is grown, it can go directly to the hungry. Projects like Lettuce Link in Seattle supply food banks with produce from community and backyard gardens, making it accessible to those in need.

The farming periphery and wilderness can be optimally utilized by city dwellers through farmer's markets and direct marketing. In New York City, government agencies provide coupons for low income families that are redeemable at local farmer's markets, promoting healthy food to a sector needing nutritious options. This makes such resources more accessible while

still facilitating local farmers with a profitable outlet that helps the city keep its agricultural periphery.

Grassroots

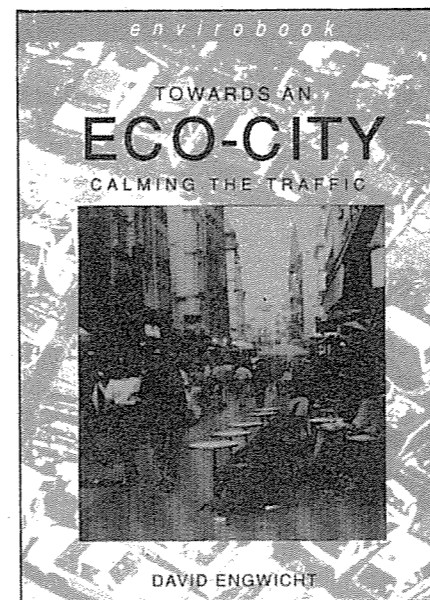
Major environmental groups have grown into large organizations with political clout, but have become detached from local, grassroots issues. In response, there are more small, racially diverse groups, organized to fight pollution and threats to their neighbourhoods. Many of these groups are organizing in lower income communities which typically receive the brunt of environmental degradation and pollution. These grassroots organizations will increasingly shape the city. They restore parks, replant streets and boulevards. Planting the future's sacred groves, memorial boulevards and ritual forests, they also reconnect today's neighbours and nature.

Uncertainty

Most people are in conflict about the future they want. Moving to the suburbs and exurbs to enjoy open space and rural quality-of-life is appealing, yet compromises the qualities originally sought. Decisions are complex. The temptation is to simply 'get mine while I can' from the highest official to the teenage drug runner. The future city and the role of the landscape are no exceptions. We must teach the public the value of their environment and create systems that ensure the health and longevity of the natural habitat. We must be tree and soil advocates. We must provide tools and services that enable local economic development, self-reliance, and realization of grassroots efforts. But more importantly, we must help the public express their deepest and best values if nature is to have a place in the city of the 21st century.

It is difficult to decipher true desire from available options. The hopeful and healthy future city must be consciously chosen over the unhealthy city. Landscape architects, designers, and planners have to help people see a future city that is clean enough to be healthy and dirty enough to be happy.

Randolph T. Hester Jr. and Laura Lawson are from the Department of Landscape Architecture at the University of California.



Towards Eco-city: Calming the Traffic

by David Engwicht, Envirobook, Sydney, 190pp, 1992, \$19.95

Reviewed by Stephen Darley

David Engwicht is one of the founding members of and spokesperson for Citizens Advocating Responsible Transportation (CART). This Brisbane community group was formerly named Citizens Against Route Twenty, and was set up in 1987. The name change reflects the transformation the group underwent early in their campaign, from opposition to a particular freeway development which threatened their suburbs, to a campaign searching for alternatives to auto-dominated cities.

Towards an Eco-city represents a further step along this path. In 1989 Engwicht and other members of the

group produced the well-known *Traffic-Calming* booklet, subtitled 'The solution to route twenty and a new vision for Brisbane.' This book further generalises and develops the ideas thrown up in the earlier campaign and publication, and attempts to rescue the revolutionary nature of CART's goals.

That they need some rescuing is clear to anyone working in the broad field of city planning, transport and the urban environment. 'Traffic Calming' has been taken up and popularised, particularly amongst local councils in most cities in Australia, but usually in a very diluted and fragmentary way. As the book quotes a town-planner: 'Traffic-Calming involves a fundamental rethinking of metropolitan planning and organisation.'

But rather than take a city-wide, radical and integrated approach, predictably, after initially attempting to discredit 'Traffic-Calming', planners have opted for the tried-and-true tactic of co-option. Engwicht says:

within two years of its release many planners in Australia had adopted some of the techniques of 'Traffic-Calming', and in many cases even the rhetoric. Unfortunately, most also clung to the old planning ethos which sees the city and its streets as a machine rather than a people's place. The result has been a continuation of auto-dominant planning sprinkled with traffic-calming techniques and ... rhetoric on top to make the old recipe more palatable.

Many experienced activists might have predicted this result, given the structural and institutional impediments to environmentally and socially sus-

Reviews

tainable urban planning, but I will return to this point later.

So what of Engwicht's rescue bid? The most enlightening and effective aspect of his argument is the emphasis on the destruction of community through auto-domination, and the ways and means to revitalise it in the 'eco-city'. Persuasive evidence is presented of the reduction of interaction, and the isolation and alienation of residents from friends and neighbours and their physical surroundings, as traffic enlarges its zone-of-influence.

Engwicht constructively analyses the links between declining public transport, urban sprawl, the destruction of neighbourhood shopping and other local services, and rising traffic densities, large-scale carpark surrounded retail and administrative centres, and the domination of the city by the car. This perhaps reaches its apotheosis in Los Angeles, where two-thirds of the land area of the metropolis is dedicated in some way or other to the requirements of the automobile (and its driver, of course), and intensifying social alienation and poverty contrast with growing wealth and waste.

The book also describes at length what a city transformed by 'eco-relational' thinking would look like. He evokes organic analogies such as the tree-branch and fractals, to envisage a city in which specialisation and segregation of function is radically diminished, and in which each neighbourhood is more-or-less a microcosm of the suburb, which in turn fits into a district, that into a region, and that into the city as a whole (some environmentalists might want to take the process one step further and fit the city into an

Reviews

appropriate bio-region).

Each 'cell' of the city would be as self-sufficient as possible, and provide as many goods and services, as much recycling of waste, and as developed a social identity, sense of place and opportunities for self-expression as possible within that local area.

The key principle for Engwicht, is to 'maximise exchange whilst minimising costs in resources and time', exchange being broadly defined as culture, goods, friendship and knowledge. The purpose of transport in this model is to maximise exchange rather than movement.

Much of what *Towards an Eco-City* says is vital and relevant to those environmentalists who have not rejected the city entirely in favour of a romantic-utopian de-urbanised future. But, as the title of the book quite properly acknowledges, there is a long way to go in fleshing out not only the vision of what an eco-city might be, but perhaps even more importantly, that old political question of how we get there from here.

In terms of social and political strategy, then, Engwicht's book raises some conundrums. He relies heavily on the organicist paradigm, which uses the analogy of an organism (or in this case an ecosystem) to explain society and provide a desirable model to pattern

cities upon. He has to take on board the pluses and minuses of that paradigm, however.

On the positive side, there is a strong emphasis on the interconnectedness and interdependence of both nature and society, and a rejection of the reductionism and over-specialisation of the mechanistic paradigm. But organicism *shares* with this model an emphasis upon social harmony which can be positive if posed as the desired future, but mystifying and dangerous if implicitly or explicitly it is projected onto the present or the past.

For example, Engwicht implies that the main cause of auto-domination is ignorance or fear on the part of planners and engineers. If they, and the rest of the community are better educated in both the substance and the values of eco-relational thinking, then we are well on the way to building the eco-city. Again, in his chapter and section headings (such as 'How traffic destroys the eco-city', and 'Re-building the eco-city together' [my emphasis]), Engwicht implies we are in some sense returning to a lost past. He certainly makes explicit the responsibility he places on the mechanistic, reductionist model that has dominated Western thinking processes in the last 300-400 years.

What worries me is the lack of emphasis on the forms of gender, class, and race domination, exploitation and segregation that have powerfully shaped cities since their earliest development, and continue to do so today. Education isn't enough to prevent vested interests such as the car, oil and rubber oligopolies pursuing their interests and influencing government, and despite Engwicht's advocacy of social equity, this key issue is somewhat neglected.

These concerns aside, however, the book is very valuable for all urban ecologists in helping to raise the field to the forefront of environmentalism. As has often been noted, cities are the origin of environmental destruction, and they must also provide the solutions.

Stephen Darley is involved with People for Public Transport and is a graduate student in environmental studies.

Brief Book: Biotechnology, Microbes and the Environment

by Stephen Witt, Centre for Science Information, San Francisco, 219pp, 1990, \$17.50

Menace or Miracle? Biotechnology and the Third World

By Robert Walgate, Panos Institute, London, 199pp, 1990

Inside the Biorevolution

by H. Hobbelink, R. Vellve and M. Abraham, IOCU and GRAIN, 1990, 145pp, \$10

Reviewed by Sue Skinner

What do you know and feel about biotechnology, its potential benefits and risks? Do you understand the topic and techniques enough to continue informed and useful debate? Do your views have people of developing countries' best interests at heart?

Developing countries are the biological treasure houses of the world - stocked with unique organisms found nowhere else on earth. Yet, people of these regions are often poor and living in desperate conditions. Biotechnology could provide new medical treatments, vaccines and food, reduce the use of fertilisers, pesticides and other chemicals, preserve existing species and help raise living standards. Alternatively, biotechnology could destroy and displace natural wealth and further prise the poverty gap between developed and developing countries.

Three useful references for those who want to know more are *Miracle or Menace*, *Briefbook: Biotech, Microbes and the Environment* and *Inside the Biorevolution*. All three books agree that there has been too little public consultation or education and that immediate international debate and planning is needed. But the styles and point of view of each book is quite different.

The first two help the reader better understand the issues and the science

itself. They do tend to accept biotechnology as the way of the future and offer little alternative. *Inside the Biorevolution*, on the other hand, opposes biotechnology and is a useful directory of contacts, action groups and references on biotechnology.

The *Briefbook* provides an overview of the science, history and issues surrounding biotechnology and the issues people in the *developed* countries face. The authors are American and tend to present a First World perspective. Also it looks at the world of microbes - bacteria and viruses - not the use of biotechnology in plants, animals or human health.

The text is fun, simple, informative and easy to read, sometimes a bit tiresome. But there are plenty of cartoons, sketches and famous quotes to keep things moving. And the information is still current and topical.

The glossary and appendices provide excellent resource and background information. There is also list of 'expert sources', contact people from around the world.

Chapter seven 'A greening world debates releases' is a brief overview of the regulations and policies in other countries. It identifies the need for a unified international policy. Australia is not left out of this review, being the first country to permit the sale of a genetically engineered living microbe for use outdoors. This release, which involved very little review or public awareness, is compared with similar situations in the United States in which reactions from the public have been very strong.

Miracle or Menace examines research programmes already underway in the Third World, the implications, and in whose interests these technologies are being developed.

The text is easy to read, the content current and well-researched. Many real and potential risks are also highlighted. Simple scientific explanations are provided in separate boxes though the book. We are also advised to seek further reference in an Appendix which doesn't actually exist. Despite this, for the purpose of this book, the explanations are accurate and simple.

Issues of private power and public

interest, privatisation of useful genes, gene-plundering, containment and release at the expense of people in the Third world are also discussed. The book has a succinct list of conclusions with which the reader is encouraged to argue for or against.

Unfortunately the book makes little mention of alternatives to biotechnology such as international seed banks and using natural variants instead of inventing new ones.

Inside the Biorevolution is a ready reference guide, listing articles, contact people and journals relating to biotechnology issues and the Third World. The authors are scientists from Third World countries writing to stimulate debate amongst policy makers, scientists and environmentalists.

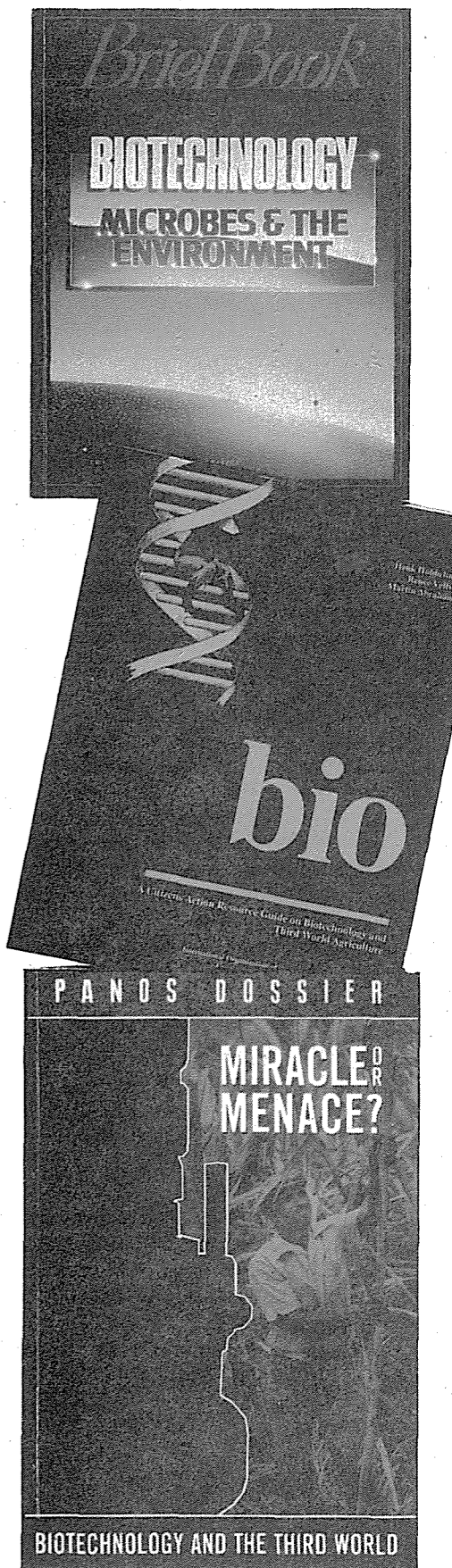
The foreword and introduction outline some of the 'doomsday' problems which will result from 'tinkering' with genes, including transformation of social, economic and environmental systems, and fears relating to safety and biological warfare. The rest of the book is divided into three parts. Part One lists a bibliography of 190 documents on various aspects of genetic resources, biotechnology and Third World agriculture. Part Two lists citizens groups, research teams and inter-governmental organisations working on biotechnology policies and programmes in the Third World.

Part Three lists periodicals which often contain material on these issues.

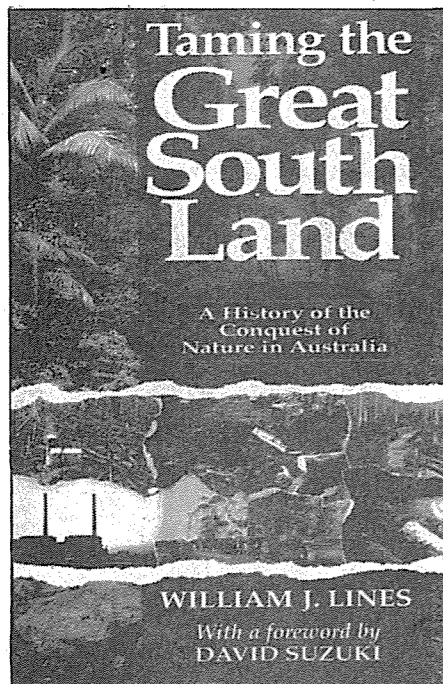
Each list is only a selection and will become dated, but does provide an overview, with quite a range and depth of available information. Each listing includes information such as - a brief comment on the article or study of the periodical, sources, prices etc.

The list of journals does not include *New Scientist* which is unfortunate because it often includes articles on Third World agriculture and new developments. Nor are any Australian agencies or contact people listed.

Sue Skinner has a science degree in genetics and is Education Officer with the Investigator Science and Technology Centre in Adelaide.



Reviews



Taming the Great South Land

by William Lines, Allen and Unwin, Melbourne, 337pp, 1991, \$34.95(hb), \$19.95(pb)

Reviewed by Maggie Hine

In an excellently written and researched, warts and all account, William Lines chronicles the ideas and events that have shaped the Australian cultural and natural heritage. In a relentless attack on the growth imperative of capitalism driven by the 'logic' of science and technology, *Taming the Great South Land* questions the very basis on which our society is based. It exposes the cruel reality of the political, social and economic forces that have, and are still, causing the reckless ex-

ploitation of Australia's people and environment.

The reader is taken on a 'Cook's tour' of Australia's evolutionary history. The journey begins 200 million years ago with the breakup of Pangea and the creation of Gondwana land and the evolution of its physical landscape, its flora and fauna, and the arrival of the Aboriginal Australians and their first environmental impacts. Then the arrival of white 'settlers' and the quest to conquer nature and reap the resultant short term material benefits of natural resource exploitation. Driven by the greed and pursuit of profit inherent to industrial capitalism 'rational' Australians commit one environmental and cultural atrocity after another.

As a 'marketable commodity' the environment is deemed to have no intrinsic value other than for human use and benefit. Firstly, there is the exploitation of whales and seals, then the forests, then the minerals and so the story continues. The relentless quest for dominion over nature is made worse by the fact that the 'invaders' had no emotional affinity to the land, they did not 'grow up in the land' as did the indigenous Aborigines, they abused the hell out of it and the Aborigines. It is almost as if the reluctant settlers, cast out from Western civilisation reaped their revenge by ravaging the culture and environment of a country they did not want to be in or have affinity with. So it becomes apparent that a cultural norm instilled in the Australian psyche is, that to prosper, we must exploit and master rather than nurture and preserve.

In a rather Churchillian statement, Lines sums up this rape of nature and the Aboriginal people, 'nowhere else on earth have so few people pauperised such a large proportion of the world's surface in such a brief period of time. In under 200 years, a natural world millions of years in the making, and an Aboriginal culture of 60,000 years duration, vanished before the voracious, insatiable demands of a foreign invasion'.

The final chapters are given over to the present environmental crisis facing Australia and the continuing exploitation, of the forests for woodchipping,

mining, oil exploration, evidence that the trends of the past persist despite the emergence of social resistance through the environment and land rights movements to stop such exploitation.

In a stab at scientifically motivated conservation, Lines warns that science and technology is now offering solutions to the present environmental crisis that 'will cost money and can be paid for only through more economic growth ... the world's environmental crisis does not amount to a crisis for capitalism but rather an opportunity' so that the creators of the crisis tout themselves as the saviours.

Taming the Great South Land offers the opinion that history has shown that environmental and cultural exploitation are the direct result of the growth imperative inherent to capitalism. The compendium of facts in the book puts pay to the romanticised popular history of pioneering Australia, and details events that we prefer to ignore. In doing so, Lines calls for us to reconcile ourselves with the true Australian heritage and to put an end to continued exploitation and destruction through collective social action. For the environment movement to meet its goals it has to challenge the very basis of our political economy and social structure. To do anything less we are merely propping up a system that continues to exploit and destroy.

This book has come at a pivotal time, proponents of economic rationalism abound and the political expediency of courting the 'green vote' has waned in the present economic recession. *Taming the Great South Land* is essential reading for anyone who purports to be a conservationist or environmentalist and doubts the necessity of effecting social change to ensure that environmental and cultural exploitation ceases.

As much as the book is a retrospective analytical account it is a call to act to instigate such changes. If anyone needs the motivation, evidence, incentive or boost to take such action then reading this book is the answer.

Maggie Hine is an anti-nuclear activist with Greenpeace.

Ship of Fools

by Patrick Cook, Allen & Unwin, Sydney, 1991, \$17.95 (pb)

Reviewed by Larry O'Loughlin

The latest book of Patrick Cook cartoons is wonderful, like his others, and well worth having for those times when you want to feel bitter, twisted and cynical and laugh about it at the same time.

Cook offers funny and thought provoking looks at depravity, perversion, illness, alcoholism, death, even cigarette smoking for that dying breed.

He cartoons for *The Bulletin* and the *Independent Monthly*. He also writes scripts and columns, but this is the first book of cartoons since *The Great Big Cook Book* in 1985, and features work published during the last five years.

Cook's drawing looks like it is done quickly but at the same time it contains wonderful detail, especially in facial expressions. An example is the book's cover. Koalas are variously struggling and enjoying setting the sails on a firmly rooted tree. A rope leads to a small dinghy in a pond containing a more relaxed group of koalas with a group of pink birds, possibly galahs, flying overhead. Each character has a clear and different expression, with a broad range of emotions represented.

Cook uses koalas to portray Australian humans. Japanese humans usually wear sunglasses and carry cameras, although there is one where a pot-bellied Australian male with a drink in his hand says 'Stop buying our real estate' and a large sumo wrestler-type, with glasses and briefcase, replies 'We thought you'd finished with it'.

Sometimes his portrayal of the Japanese worries me, but as I start to see what I think may be racism I then see or recall other cartoons which run counter to that, so I remain undecided.

He has a lot of subjects, and I suspect he is one himself, perhaps the fat koala with junk food imperturbably saying to a disapproving colleague: 'I eat it. I live. It is therefore a health food.'

Larry O'Loughlin is an editor of Chain Reaction

Window

by Jeannie Baker, Julie MacRae Books, Random Century, 1991, \$17.95 (hb)

Reviewed by Larry O'Loughlin

This book by Jeannie Baker uses the style of preparing beautiful, meticulous collages which are photographed and printed to tell the story. The very few words that are used are part of the collage in some way.

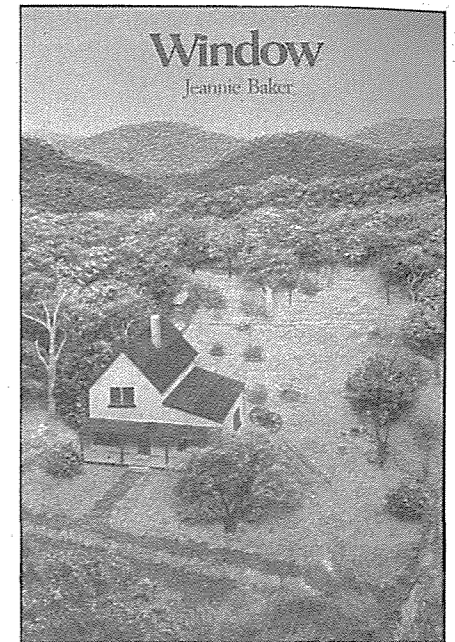
This puts great responsibility on the pictures to tell a story, something they do very well. I say 'a' story because without words to help define and therefore limit my perception, I find different meanings and emphases each time I look at the book.

The 'story' then is about the changing view, over time, through a window, as bush turns into city. The first picture shows a woman with a new-born baby looking out the window where there are forested distant hills and closer trees, birds, butterflies, a few weeds, an outdoor dunny, and a pet cat. There is also a lizard on the window sill.

These elements develop throughout the book and show the advance of urbanisation. The last picture shows the child, now a grown man, holding what is presumably his child as he looks out of a window in a different house. Although the scene is reminiscent of the first picture, there is now a city in the distance and a road and a sign advertising house blocks, suggesting that it is now harder to escape the sprawl of the cities and towns.

The book also suggests that it is not just a matter of distant views changing, there are a lot of back yards and front yards going through that process, and the sum of these individual efforts is a large part of the change that occurs, along with the new buildings and roads. Although we might want to get away from it we are also creating that which we wish to escape.

This suggestion that we are all implicated, along with the advancing degradation portrayed, make the book a little disturbing, that is, it is not a book that leaves us as comfortable spec-



tators, seeing the damage as being all done by others. It also suggests the valuable notion that in spite of our individual contributions to the problem there are no individual solutions. The book does not suggest any solution, however, and I feel that it is a little pessimistic.

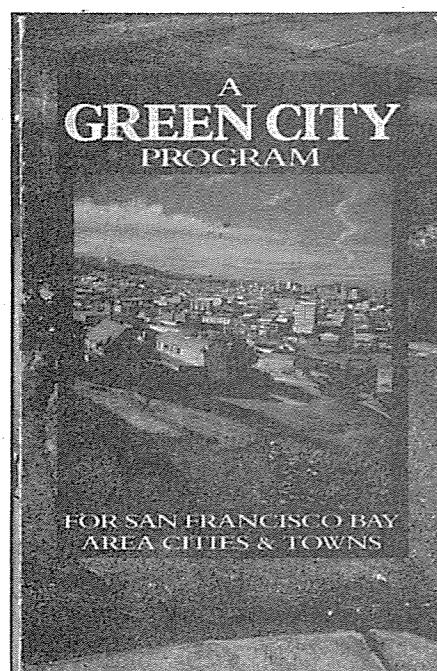
I was a little surprised by this, as I was expecting a children's book, and I thought that happy endings of some sort would be more popular. But this could be a book for all ages, with perhaps some problems for it as a book for children.

The highly visual presentation makes it easy to look at, and this is an attraction for children although I suspect the pessimism I see in the book may also be perceived by some children, meaning it is less likely to be picked up and read. This is only a suspicion, as I have watched a five year old seeming to study the pages, and he has declared it to be a book he likes.

The book is good, and I would recommend it to anyone who has seen Jeannie Baker's previous work and liked it. The book should have a broad audience and would be a good gift as well as being the sort of thing that should be in waiting rooms everywhere.

Larry O'Loughlin is still an editor of Chain Reaction.

Resources

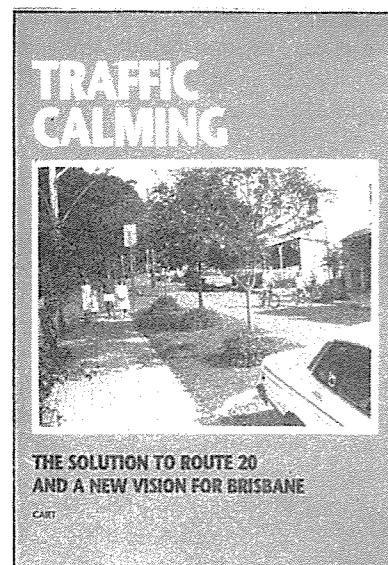


A Green City Program

Berg, Magilavy and Zuckerman, Planet Drum Books, San Francisco, 1989, 70pp.
ISBN 0-937-1020-2-4

An attractive summary of the discussions that grew out of Planet Drum's Green city Project in 1986. Each of the nine chapters looks at the current situation, considers possibilities and ends with a fable or alternative vision.

Available from: FOE Bookshop, 222 Brunswick St Fitzroy, Victoria, 3065
Ph: (03) 419 8700

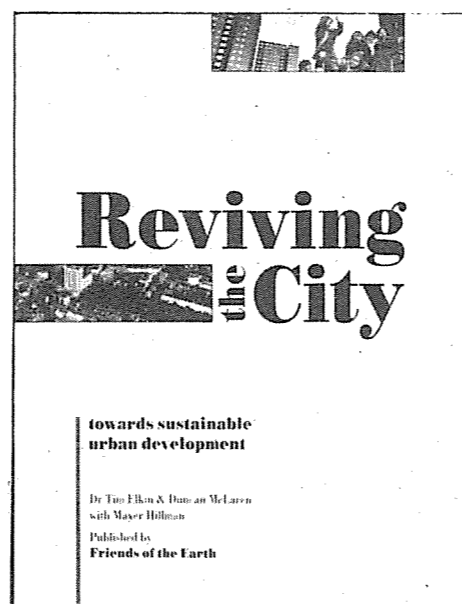


Traffic Calming

CART, Brisbane, 1989, 40pp, \$10
ISBN 0-731-6541-4-5

An attractive and comprehensive exposition of traffic calming. Best of all, it's readable! Produced by a group which started out opposing freeways and ended up with a deep analysis of traffic problems.

Available from: CART, 50 Exeter St, Ashgrove, 4060.



Reviving the City: Towards Sustainable Urban Development

T. Elkin, D. McLaren with M. Hillman, Friends of the Earth, London, 1991, 278pp
ISBN 0-905-9668-3-X

A response to the European Commission's green paper on urban development and sustainability, this book covers a range of issues in detail. The tables and figures are relevant only to the UK, but the general issues have wider interest.

Available from: FOE, 26-28 Underwood St, London N1 7JQ, England.

Conference Report - EcoCity One

Urban Ecology, Berkeley, California, 1990, 128pp, \$12

A grab-bag of people and ideas, good for browsing. A good overview of global projects and city development.

Available from: FOE Bookshop, 222 Brunswick St, Fitzroy, Victoria, 3065.

Towards a More Sustainable Canberra

P. Newman and J. Kenworthy, ISTP, Murdoch University, Perth. 1991, 157pp, \$20

A study commissioned by various groups in Canberra allows Newman and Kenworthy to apply their research in 'automobile dependence' to Canberra. An excellent model to follow when analysing cities - full of photos, tables and examples.

Available from: ACF Books, 340 Gore St, Fitzroy 3065, Ph: (03) 416 1455

Sim City

Maxis Software, IBM, Macintosh and Amiga versions, approx. \$80

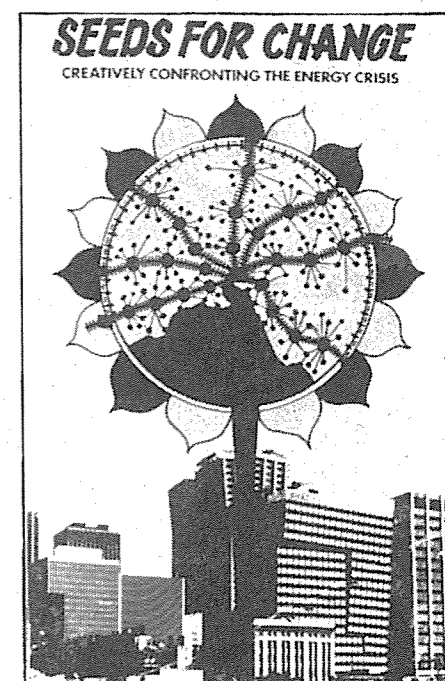
Build your own city with this clever program - solve traffic jams, clean up after floods or unleash Godzilla upon your unsuspecting population. This simulation allows you to design your city, zoning residential commerce and industry, adding fire stations and power plants, building roads, rail and football stadia. Important tip: build a nuclear power plant and an airport, and it's odds-on that a plane will crash with disastrous results.

A warning: highly addictive!

Seeds for Change: Creatively Confronting the Energy Crisis

Conservation Council of Victoria, 1978, 531pp, \$8.55
ISBN 0-959-8485-3-3

This analysis of energy use quickly moves to the design and encouragement of convivial neighbourhoods. One of the first books to articulate a vision for a new city. Clearly written with useful diagrams, it is now out of print, but you may find it secondhand or borrow it from a library.

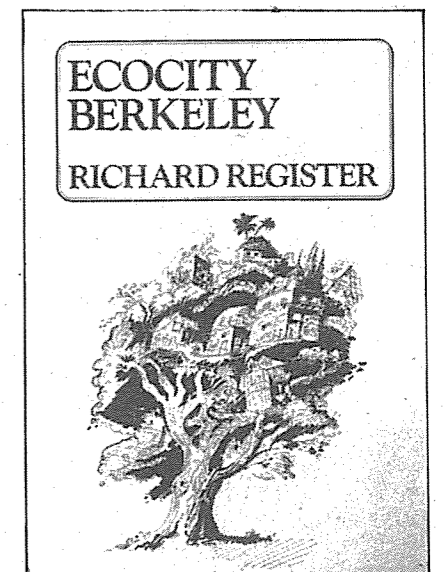


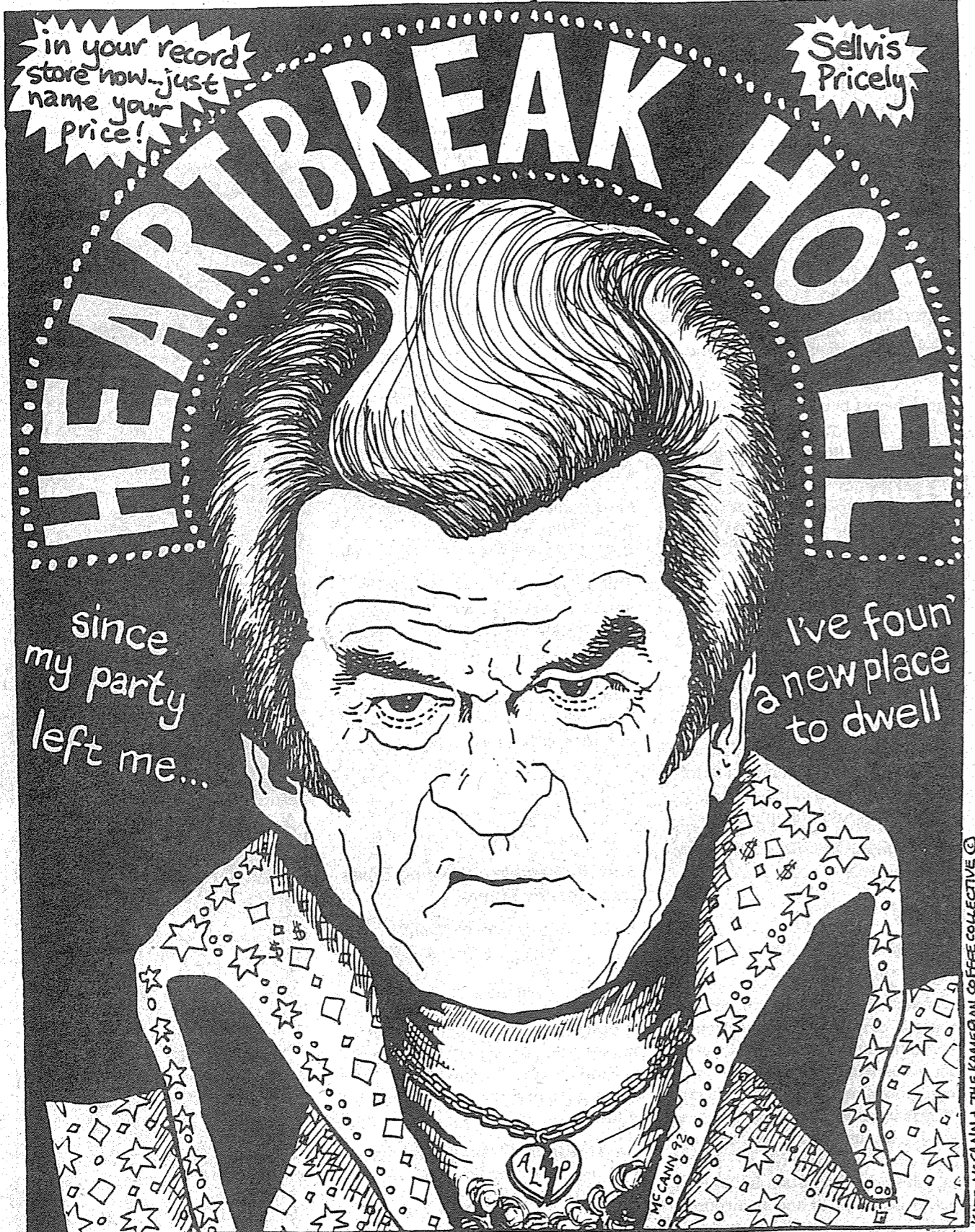
EcoCity Berkeley: Building Cities for a Healthy Future

Richard Register, North Atlantic Books, Berkeley, California, 1986, 140pp, \$16.95
ISBN 1-556-4300-9-4

A description of the elements that make up an ecocity, with practical suggestions on how to transform an existing city. An exciting vision of the future.

Available from: Boobooks: Freepost 114, Balgowlah, NSW, 2093
Ph: (02) 949 5255





including all your old favourites, Suspicious Minds, Viva Lost Wages, The Great Pretender, Love My Tender, In the Ghetto (on a cold & grey 1990 morn, another Australian child was born, in the Ghetto.)

Environmental Youth Alliance

National Conference

**One People,
One Planet,
One Struggle**

April 18-19, 1992
(Easter weekend)
Arbury Park Outdoor School
Arbury Park, Bridgewater, South Australia

Here are some of the issues that will be discussed at this year's conference:

Saturday is the public day. We'll start with information and discussion on the UNCED International Conference, a United Nations sponsored conference on the environment and development. The rest of Saturday will be taken up with workshops around the theme of environment and development.

Sunday is the activist day where we will discuss how we can get our message out. We also need to discuss campaigns we can be involved in - there are so many ideas.

Registration: Whole conference inc. meals and accomodation - \$30; One day inc. meals - \$10; Whole conference without accomodation - \$20

Accomodation is at the conference site, just bring sheets or a sleeping bag.

Phone us on (08) 231 6982 to register or offer help.

Nuclear Test Ban peace movement
Security NEW CALEDONIA Maoris
Arms Exports Disarmament Fiji ...

The Pacific.
For just \$20*

A PERIODICAL OF THE PEACE RESEARCH CENTRE
AUSTRALIAN NATIONAL UNIVERSITY

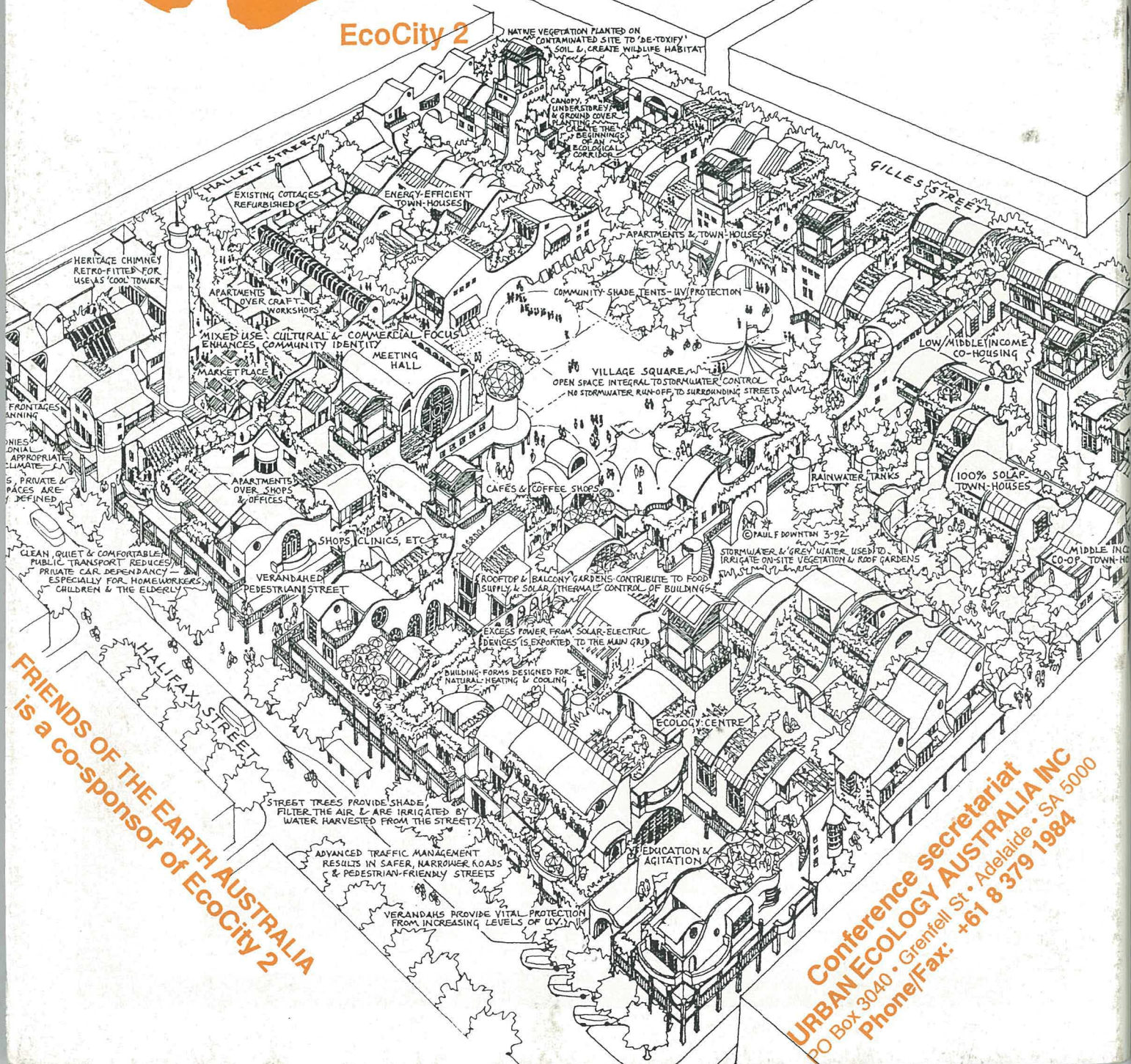


* 4 Issues per year for \$20 Australian.
Subscriptions: Peace Research Centre
Australian National University, GPO Box 4
Canberra ACT 2601, AUSTRALIA

EcoCity

The Second International Ecological City Conference
 16-19 April 1992
 Hilton International
 Tandanya Bioregion
 Adelaide • South Australia
 Conference fees: \$40 to \$195

EcoCity 2



FRIENDS OF THE EARTH AUSTRALIA
 is a co-sponsor of EcoCity 2

Conference secretariat
URBAN ECOLOGY AUSTRALIA INC
 PO Box 3040 • Grenfell St • Adelaide • SA 5000
 Phone/Fax: +61 8 379 1984