

The Ecologist

Vol 24 No 1 January/February 1994

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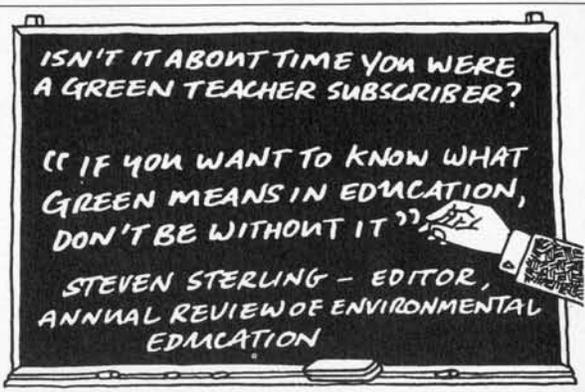
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The Ecologist is published by Ecosystems Ltd.

Editorial Office and Back Issues: Agriculture House, Bath Road, Sturminster Newton, Dorset, DT10 1DU, UK. Tel: (0258) 473476 Fax: (0258) 473748 E-Mail ecologist@gn.apc.org

Subscriptions: RED Computing, The Outback, 58-60 Kingston Road, New Malden, Surrey, KT3 3LZ, United Kingdom Tel: (0403) 782644 Fax: (081) 942 9385

Books: WEC Books, Worthyvale Manor, Camelford, Cornwall, PL32 9TT, United Kingdom Tel: (0840) 212711 Fax: (0840) 212808

Annual Subscription Rates

£21 (US\$34) for individuals and schools;

£45 (US\$75) for institutions;

£15 (US\$25) concessionary rate

(unwaged people and subscribers in the Third World and Eastern Europe).

Air mail £11 (US\$19) extra.

Concessionary rate only available from RED Computing and The MIT Press and not through other subscription agents.

The Ecologist is published bi-monthly. The rates above are for six issues, including postage and annual index.

Subscriptions outside North America payable to The Ecologist and sent to RED Computing (address above). We welcome payment by UK£ cheque drawn on UK bank, US\$ check drawn on US bank, eurocheque written in UK£, banker's draft payable through a British bank, UK or international postal order, Access, Visa or MasterCard.

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Up to 265x185mm, not more than 10g each:
£45 per thousand, full run, plus VAT; £60 per thousand, part run (minimum 4,000), plus VAT.
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The Ecologist International Serial Number is: ISSN 0261-3131.

Printed by Penwell Ltd, Station Road, Kelly Bray, Callington, Cornwall, PL17 8ER, UK. Tel: (0579) 83777

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The Ecologist is available on microfilm from University Microfilms International, 300 North Zeeb St., Ann Arbor, MI, USA

The Ecologist

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THORP: Britain's Nuclear Dustbin

On December 15, 1993, the day that Prime Minister John Major shook hands with Albert Reynolds, the Prime Minister of Eire, in the hope of bringing peace to Northern Ireland, his ministerial colleague, Environment Secretary John Gummer, took a decision that could shift the world closer to the brink of war. He gave the green light for THORP.

Over the next 10 years, the £2.8 billion Thermal Oxide Reprocessing (THORP) complex at Sellafield in Cumbria could produce 60 tonnes of plutonium, an unavoidable byproduct of reprocessing spent nuclear fuel, and, not by chance, the raw material for making nuclear bombs. The link between nuclear weapons and civil nuclear power has long been an embarrassment to the nuclear industry. When THORP was first conceived in the 1970s, British Nuclear Fuels Ltd (BNFL), the plant's operators, promised a new dawn: THORP's plutonium, it argued, would not be used for bombs, but would have a peaceful use as the fuel for a new generation of "breeder" reactors — nuclear plants that would reproduce their own fuel.

But the technology has since ground to a halt, as critics warned it would: the experimental fast-breeder at Dounreay in Scotland is closing this year, and the French Superphénix, leaking its volatile sodium coolant, is unlikely to rise from the ashes. Only the Japanese, and possibly the Russians, still dream that a plutonium fuelled reactor will flourish. Although BNFL now claim that the plutonium will be used in Mixed Oxide Fuel (a mixture of plutonium and uranium), this is both expensive and unlikely to employ more than a small fraction of the total inventory. The rest will simply pile up, prey to the unscrupulous or the power-crazed.

Bombs and Dead Bodies

THORP will increase massively the world's stockpile of plutonium. It will also send it thousands of miles around the world to countries like Japan in ships requiring military escorts, in the process unlocking a security and proliferation nightmare. What if the North Koreans use the stockpile of Japanese plutonium as an excuse to develop their own bomb, as many analysts fear is already happening? The consequences for the volatile East Asia region are horrendous.

This is not the only danger associated with the Cumbrian complex. THORP will perpetuate the radioactive discharges into an already heavily contaminated coastline, adding new dangers like Krypton gas and increasing the health risks to those living nearby — and not so near. According to calculations based on a report by the National Radiological Protection Board, the plant could result in over 200 fatal cancers around the world over the next 25 years. Greenpeace put the figure at 5,000 for the Sellafield complex as a whole, with THORP killing 60 a year. All of this, of course, assumes that THORP works according to the technical models. The Sellafield site has an appalling safety record, regularly criti-

cized by official bodies. It is hard to believe that the numerous "incidents" we have seen in the past, from contaminated beaches to plutonium "sprays", will not be repeated in the future, endangering both workers and the public.

There will also be an increased burden of nuclear waste to be dealt with, not just from British reactors, but from the overseas customers who have signed up deals with BNFL. There is still no acceptable long-term means of disposing of existing waste, let alone the new quantities that will be generated by THORP. The nuclear industry's waste management arm, NIREX, is talking about excavating a "rock laboratory" under the Cumbrian coast, but the talk is just that: a repository whose science is anywhere near acceptable is as elusive as critics of nuclear power have always predicted. Even worse, BNFL is planning a "substitution" arrangement by which contracts to return waste to overseas clients allow for a small quantity of high level waste to be sent back in exchange for much larger amounts of lower level wastes to be disposed of in Britain.

It is hardly surprising, therefore, that the government's nuclear waste advisory body, RAWMAC, has expressed serious doubts about substitution and concluded that reprocessing is unnecessary, just as the parallel body on health risks, COMARE, has said it cannot guarantee the health of people in villages round Sellafield. These are cautious bodies whose hackles are not easily aroused.

It might be asked why its customers have stuck with THORP if its disadvantages are so obvious and its rationale overtaken by events. The answer is partly that their contracts, many signed way back in the late 1970s, oblige them legally to send their fuel there. But there is also an argument that if they have no waste management facilities of their own, THORP at least takes it off their hands. This is Britain as a nuclear dustbin.

The Plant Nobody Wants

Environmental groups have long opposed THORP, and their arguments have gradually won over allies within a previously hostile establishment. In 1986, THORP was condemned in a major report by the House of Commons Environment Committee. The chorus of disapproval has since become international, with protests from the governments of Scandinavian countries, fearful of further pollution, as well as important sections of the US administration concerned about the dangers of plutonium proliferation. Earlier this year, the Paris Commission on marine pollution, representing 12 European countries, voted by a large majority to demand severe restrictions on the discharges from THORP.

There are misgivings even among the two main overseas customers for the plant, the Germans and the Japanese, especially about the large quantities of plutonium which THORP will release. The German power companies are only committed because their Atomic Law demands some method

for dealing with used fuel; if they could develop "dry" stores — where used fuel rods are not reprocessed but left intact and stored in an air-cooled warehouse — as is now beginning to happen, they would drop THORP tomorrow. The Japanese, determined to be self-sufficient in energy, still dream of entering a plutonium economy, but are finding it an increasingly difficult road to follow. Both countries' plans are opposed by strong anti-nuclear movements.

THORP does not make sense in the world of the 1990s. With virtually no new reactors being commissioned, its recycled uranium is as useless as its plutonium, although not so dangerous. Moreover, dry storage of spent fuel provides a safer and cheaper waste management option than reprocessing: this is what the Scottish Nuclear company is planning to do with the rods from its reactors, and what many countries with nuclear energy programmes, from Sweden to the United States, have opted for. Abandoning THORP and converting the existing contracts to a dry store process, including the cost of building the plant, would still be a cheaper option for British Nuclear Fuels.

John Gummer, a known nuclear enthusiast whose constituency includes Sizewell with its two nuclear reactors, has chosen to ignore all this opposition. It is likely that he made his mind up long ago. He conducted a second round of consultation into the justification for THORP only because he feared a legal challenge from Greenpeace if he failed to do so. The fact that he entered that process with a statement saying that the government was totally in favour of THORP hardly encouraged belief that it would be impartial.

A White Elephant

If THORP had not already been built, nobody would think of building it now. The plant is only being opened because it has been constructed at great expense, and in the face of enormous public opposition: to abandon it now would be the final straw for an industry already fighting for its life. It is a matter of not losing face — never mind the cancers and the casualties.

The apologists in both the government and BNFL attempt to justify their decision by saying that THORP will make money. In fact, even according to the company itself, it will

generate a profit of just £50 million a year, a return of only two per cent on the capital. But where is the report by accountants Touche Ross which justifies this figure? Secret, of course, like much else to do with Sellafield's chequered history. Most independent economists reckon that THORP is heading for financial disaster. With the unpredictable costs of decommissioning the plant, the notorious cost over-runs of all nuclear projects, and with the likelihood of little business after its first 10 years, THORP could be a very expensive state-funded white elephant.

Much pious nonsense has also been talked about the jobs crisis in West Cumbria. British Nuclear Fuels should have been looking for diversification, instead of leaving the local people hanging to its nuclear coat-tails. There would almost certainly be more jobs in constructing and operating a dry store than in operating THORP. And since when, anyway, was the government so concerned about jobs in the energy industries? Remember those 30,000 deep-pit miners thrown onto the dole queue when their pits were closed by the government in 1992?

The costs in monetary terms are irrelevant anyway. Re-processing remains the dirtiest end of a dirty industry whose pollution is all the more insidious for being invisible. Although still plagued by controversy, the harsh truth about the effects of occupational exposure to radiation is now beginning to emerge. Only a few weeks ago, for the first time, the Ministry of Defence accepted liability for the cancer resulting from a nuclear submarine worker's overdose of radiation. He was paid £167,000 in compensation. Families around Sellafield are still battling through the courts for the same type of recognition. How will John Gummer feel when the casualties of THORP come in?

Gummer has gone for the easy line that there are jobs to be gained in Cumbria and some foreign currency to be earned. In the process he will leave a radioactive relic on the Cumbrian coast to contaminate future generations and unleash a stockpile of poisonous plutonium on to a world that neither needs nor deserves it. THORP must be closed. Even now it is not too late.

Crispin Aubrey

Crispin Aubrey is the author of *THORP: The Whitehall Nightmare*, available from WEC Books, Worthyvale Manor, Camelford, Cornwall, PL32 9TT, UK, price £5.99, plus p&p £1.50 (UK), £2.00 (overseas).

Survival and Resistance in Africa

Something of a renewed spirit of hope can be glimpsed in Southern Africa today. I would like to communicate that spirit by telling some stories. These are just short tales, little more than sketches. But because they are drawn from the living experiences of people, they may convey more than accounts drawn from books or newspapers.

Digging into History

My first story is from Botswana. The Tswana people — the people who gave their name to Botswana — are pastoralists. Before colonialism, every Tswana household had cattle and,

in the arable areas, oxen to plough the land. But by the 1980s, after land had been taken for mining or reallocated for export beef, more than half of the Tswana found themselves without land or cattle — and half of these had left for the cities in search of work. Those who remained, with neither soil nor stock to their name, were faced with a struggle for survival on the veld.

Since it had been the menfolk who had been primarily concerned with cattle, it was often women who were better equipped to cope with the new conditions. In 1984, a group of women living on the outskirts of Gaborone formed themselves into a group which they called "Thusano Lefatsheng",

which means "helping each other on the land". They organized a small research farm where they began testing native veld crops such as *morula* fruit and kernels and *morama* tubers and beans. They found that the Kalahari Devil's Claw plant could be cultivated and processed to provide a medicine for common ailments.

The group organizes the cultivation, harvesting, processing and purchasing of these plants, providing employment for 1,500 harvesters and 10 processors, mostly women from poor areas. The products are sold in local markets in Gaborone and nearby areas. Because the plants are well adapted to the harsh and variable climate of the Kalahari, they are more reliable as a source of food and income than "European" beans and vegetables. Moreover, as the men were not interested in growing these veld plants as cash crops (although they do eat them now), the women could earn a cash income for themselves without fear of it being appropriated by their husbands.

Thusano Lefatsheng's great breakthrough is to have given renewed legitimacy to indigenous foods which for decades were regarded as "wild" or "inferior" to the "European" foods, mostly imported from South Africa, which had become a sign of social status. In trying to cope with the problem of food security, the women of Thusano have shown that restoring the dignity of traditional crops and medicines is not "going backward", as their husbands sometimes complain, but moving forward in line with nature's laws and reconnecting with the spirit of the land.

This story is commonplace enough: indeed throughout Africa there are numerous groups undertaking similar efforts to develop what are fashionably described as "survival strategies" in the face of the continent's worst drought in nearly a century and increased economic hardship. But I wonder whether Thusano Lefatsheng and other like-minded groups are not motivated by more than the mere quest for a "survival strategy". Do I detect a spirit of resistance, of defiance, not rebellion as yet, but close to passive revolt against the dominant form of Western-style development? In the case of Thusano, this resistance takes the form of digging into their historical past to rediscover the knowledge of ancient food systems. In other cases, it takes other forms.

Slow but Sure

Ukwile and Msia are two villages in south-western Tanzania where village people are consciously trying to farm with as few external inputs as possible. Their efforts are supported by the Community Trust and Development Fund (CTDF), a network founded in Tanzania in 1961 to support Julius Nyerere's well-intentioned but ill-fated *Ujaama* policies. Recently CTDF has moved away from the "top-down" approach of earlier years and is slowly placing faith in people's efforts to decide their own future.

The villagers are striving to work with the greatest possible use of local resources, whenever they are available. To replace pesticides they are reviving the use of a local tree called "utupa" (*Trifosea vogelli*). The leaves of this tree have traditionally been turned into a liquid solution, used for controlling pests on maize, but the villagers are now experimenting with turning them into powder, which stores better and is lighter. The villagers are also reviving older technolo-

gies or experimenting with home-made designs. They are replacing tractors with oxen, whose manure maintains soil conditions better than imported fertilizers. They have also developed improved granaries made from local materials and made moulds to produce sisal/cement roofing tiles that are 40 per cent cheaper than the imported corrugated iron.

However, there are forces ranged against the villagers. There is pressure from better off "progressive" farmers to modernize and they are supported by foreign NGOs which are promoting chemical agriculture. Some of these groups distribute fertilizers free of charge to local farmers. It is not easy for the supporters of low input agriculture to explain to others how the initial high yields achieved with chemicals cannot be sustained if the organic texture of the soil is not maintained. As the fertility of the soil deteriorates, more water has to be used, especially in times of drought. Yields deteriorate and farmers have to spend more and more on fertilizers, in effect losing control over their soils to the chemical corporations. Low external input agriculture may be slow in its returns, but it is surer.

The Ancestors

The agrochemical corporations call for people to hurry to "development", with the offer of instant returns. Theirs is a short-term Western view, which discards the past and discounts the future, the view of a people who have lost the ability to look beyond their own generation. This restricted vision is alien to African cultures, for whom the dead and the unborn are integral to the present. The spirits of the dead imbue the lives of the living and inhabit the unborn.

Among the Shona of Zimbabwe there is still great respect for the spirit mediums — male or female — through whom spirits of the ancestors speak when they feel the need to communicate with the living. The *chimurenga*, the liberation war fought by the people of Zimbabwe against the illegal Smith regime, was fought not only by the living but also by the spirits of the dead. The most important of these were the ancestral spirits of Nehanda and Kaguvi, who guided the nationalist struggle, and whose statues now stand in the Zimbabwe Parliament.

Lydia Chabata, one of the founders of the Association of Zimbabwe Traditional Ecologists, is a spirit medium. Her organization operates from Masvingo, some 300 kilometres south of Harare, and is centred upon the protection of sacred areas, such as the Matopo Hills, home of the High God cult, which were ravaged by Cecil Rhodes, and the *rambakutemwa* — "sacred forests where spirits reside". Over the last two years, the organization has planted over 700,000 seedlings of indigenous trees, including baobab, mahogany, *muzeze*, *mukamba*, *muchecheni* and *mutondo*, as well as fruit trees such as oranges, mangoes, pawpaws and avocados.

Real development, says Lydia Chabata, does not mean following the prescriptions of Western experts, nor can it be achieved through a fixation with foreign science and technology. It will come through empowerment of people by restoring the wholeness of the community and integrating people's lives with their natural environment. Where this environment has been destroyed or profaned by decades of colonial rule, it must be restored so that the ancestors — and the community — are at peace. The traditional responsibility towards

nature and ancestral spirits must be revived in the present context to support self-reliant, self-resourced communities.

A Third Wave of Resistance

In conclusion, I too want to look towards the past — to the recent past. There have been two waves of resistance in Africa to the arrival of Western civilization. The first was when Africans, over a period of about 100 years, put up a heroic but doomed resistance to the European armies, until they settled down to adapting to the colonial regime after about 1920. The second resistance movement, after the Second World War, culminated in the political independence of a large number of African states, though they still remained within the neo-colonial system of Western control exercised through the IMF

and the World Bank.

Is it fanciful to detect, in movements such as I have described, a third wave of resistance, emerging out of the failure of development in the "lost decades" of the 1970s and 1980s? Africans' responses to this failure — responses which analysts cast as "survival strategies" — with success become alternative strategies. And if these alternatives clash with conventional development wisdom, they may in turn come to represent a form of resistance. I dare to hope that in resisting the development agenda of the West, Africans will discover the confidence and power which the pursuit of that same agenda has manifestly failed to provide.

Yash Tandon

Yash Tandon works with the Southern Africa Non-Governmental Development Organizations Network (SANDON) and is editor of Sustainable Development: Two Perspectives, Two Practices.

Them That Trespass Against Us

Nobody knows for certain how many people in Britain are living semi-legally on someone else's property, but they probably number over 100,000. They include gypsies living in trailer-caravans, "new-age" travellers in buses, lorries or bender tents, squatters lodged in some of the million or so empty or derelict buildings throughout the country, and street-dwellers sleeping in shop-fronts and cardboard boxes.

Being homeless, they tend to be visible — and being visible, they are an embarrassment to a government that would like to portray its policy of stimulating the economy by cutting public services as a success. The government's response has been to mount, via a largely servile press, a campaign of vilification that has highlighted instances of anti-social behaviour and tried to whip up hysteria about cultural deviance. The tone was set by Margaret Thatcher herself in 1986 when she referred to new-age travellers as "a horde of mediaeval brigands".

This campaign has culminated in the British government's Criminal Justice and Public Order Bill, unveiled on 17 December 1993. Amongst its 117 separate clauses, a number are specifically targetted at gypsies and travellers and squatters; certain others are also designed to restrict people's right to demonstrate. They all focus on the protection of property and they come under the broad heading of criminalization of trespass.

A Grey Area

For over 800 years, trespass has been a civil offence in Britain: it is recognized as a dispute between individuals rather than a crime against society. Thus, it has never been a crime to walk on other people's land nor even to enter their house. It does remain a crime to break and enter, to commit a breach of the peace or to commit damage to their property: a road protester was arrested recently for "damage to a piece of string".

To those who value the institution of private property — and that includes to a greater or lesser degree almost

everybody — there may appear to be merit in the measures that the Criminal Justice Bill will introduce. In an age where families are reported to have returned from holiday to find their house occupied by squatters, is there not a strong case for strengthening property rights to enable householders to bypass the cumbersome legal procedure of obtaining the court order presently necessary to eject an undesirable incumbent from one's property — a process which may take two or three weeks?

However, the complicated common law relating to trespass, which allows a certain leeway for trespassers, has not endured since the Middle Ages without good reason. It takes into account two fundamental facts:

The first is that everybody has got to be somewhere; and it is in the interests of everyone that that somewhere is not prison.

The second is that everywhere is somebody's property. At present, more than half of all private land in Britain is owned by one per cent of the population, and three-quarters by about five per cent. So-called public land is owned by various bodies such as County Councils, District Councils, Highways Authorities, the Forestry Commission and the Crown, all of whom can act as owners against trespassers. The customary recognition of certain spots as stopping-places for gypsies and travellers was omitted from the 1965 Commons Registration Act. Thousands of people now have nowhere to go.

In the absence of legislation guaranteeing have-nots some access to land, the existence of a grey area in law surrounding the civil status of trespass has been essential in providing a legal "stopping place" where they have been able to stake out a temporary claim.

Making Trespass a Crime

The new proposals, however, go a long way towards making the simple act of being on somebody else's property a crime. Among the Bill's provisions are these:

- Squatters and occupiers claiming tenancy who fail to

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leave a building within 24 hours of application to the court by the owner will be committing a criminal offence.

- "Public assemblies of trespassers" who fail to comply with a police request to leave will be committing a criminal offence.
- Police will have the power to order trespassers to leave "if they seek to disrupt or prevent a lawful activity of the owner or his guests". Lying in front of a bulldozer will become a criminal act.
- The police will have powers to move from private land any gathering of more than six vehicles, to impound the vehicles, (even if they are someone's home) and to demand cash for their release.
- Local authorities are to be given powers to evict anyone living or camping on any land which is not their own. Failure to comply or re-entry upon the land within a period of three months would be a criminal offence.
- The duty of councils to provide safe caravan sites for travellers, which has existed since 1968, will be removed, and grants for these sites will no longer be available.
- Criminal damage to property is now to include "damage to the land itself", a provision suggesting that those who cannot be proved to have damaged "pieces of string" may be accused of damaging blades of grass.

The Extra-Legal Recourse

This ham-fisted legislation can turn those who have nowhere to go — whether they live on roadside lay-bys, abandoned fields, or contaminated industrial wasteland — into imprisonable criminals. It also reinforces the rights of owners — be they individuals or government bodies — to manage their property in ways that may not be in the general interest.

At present, the rights of the state or of wealthy owners to alter their property in the face of public interest (for example, by felling trees or constructing a road) are protected by the practice of planning law. In contrast to criminal law, defendants in planning law — they are called "objectors" — are not entitled to legal aid to contest the planning application; nor are trees, rivers or animals accorded the same right to be represented as are, say, children or the mentally ill. Contesting a planning application requires money; yet, almost by definition, it is only property-owners who can afford to do so.

Inequitable though this arrangement may be, it does make some sense. The provision of legal aid for every single planning application would compound bureaucracy and impose an onerous burden upon the taxpayer. Furthermore, until now, a sufficiently enraged public has had an ultimate extra-legal recourse — the right of public peaceful protest upon the site.

This right should not be underestimated, for it has provided collateral for respectable bodies lobbying in the public interest. Many of the most august defenders of the environment gained their initial impetus and their subsequent status from acts of trespass, or worse. The Commons Preservation Society in 1866 adopted the tactics of ripping down enclosers' fences, and thereby managed to save Berkhamstead Common, Epping Forest, the New Forest and numerous other landscapes that we now take for granted. The society still exists as the Open Spaces Society, while several of its

leading members went on to form the National Trust. Similarly, the Ramblers Association owes its reputation, above all, to the famous mass trespass on the moors of Kinder Scout in 1932.

Under the proposed legislation, the participants in these actions could have been convicted as criminals. So too could all those who have participated in the recent anti-motorway demonstrations at Twyford Down and the M11, which are forcing the government to reconsider its roads programme. Democracy springs not from the barrel of a gun, nor even from the mouth of a ballot-box, but from the understanding that people, when incensed, have a right to put a spanner in the works of a remorseless legal machinery, without risking imprisonment or being mown down in a hail of bullets. The present government's moves to cancel this right are a nasty step towards dictatorship.

Campaigning Priorities

The government's attack upon "public order" has so far elicited an uncoordinated response from the organizations representing those who are most affected. The most vigorous lobbying against the criminal trespass measures has come from a few organizations representing travellers, ranging from Save the Children Fund to smaller regional groups. Liberty, the civil rights organization, has also been a consistent voice against the bill. Squatter's groups, notably SQUALL have tried to muster opposition, though they have been hampered by lack of funds and the inability to mobilize that has always characterized the squatting movement. The Green Party divided over the issue, its erstwhile Policy Development Coordinator stating among the reasons for his resignation: "the decision by the Green Party's Regional Council, at its August meeting held in tepee, to make Travellers' Rights one of its four campaigning priorities". As for the other environmental groups, they have hardly breathed a word.

There are discernable reasons for this reticence. Those most visibly targeted by these measures — gypsies, travellers, squatters, marginals, in fact anyone who has nowhere to go — do not generally elicit press or public sympathy. Visible support for these people may deter potential funders or even place an organization's charitable status in jeopardy. It may be partly for these reasons that two large and well-known charities are apparently axing their travellers' units. Ironically, some of the loudest opposition to the Bill is coming from the Police Federation, whose members are rightly concerned about being placed in the invidious position of having to decide who is a *bona fide* member of society marooned in a lay-by, and who is a genuine vagabond.

The unpalatable fact is that criminalization of trespass is one of the government's campaigning priorities this year. The proposed measures will affect a broad spectrum of British society, represented by groups ranging from gypsy organizations to the Caravan Club, from the Ramblers' Association to hunt saboteurs, from Shelter to the M11 squatters, and from Friends of the Earth to the Friends of Twyford Down. Such groups would be well advised to forget any political differences or reservations they may have and unite in a broad front to combat this pernicious legislation. If they don't, we may live to regret it.

Simon Fairlie

The Cuckoo in the Nest

Fifty Years of Political Meddling by the World Bank

by

Bruce Rich

Established 50 years ago this year, the World Bank is now one of the most powerful institutions in the world. It was not always so: initially, there were few calls on the Bank's services and few "bankable" projects which it could fund. The Bank thus set about creating a demand for its services and the influence it now enjoys derives in large part from the patronage networks it has engineered in its client states. Not only has the Bank consistently flouted those clauses in its Charter which forbid interference in political affairs; it has also created a worldwide bureaucracy driven by a "pressure to lend" and by the desire to perpetuate itself. The losers have been the environment and the poor. Fifty years is enough.

On the evening of June 30, 1944, two special trains left Washington and Atlantic City filled with hundreds of well-dressed men (there were few women) in conservative suits, conversing in so many European languages that reporters dubbed the procession "the Tower of Babel on Wheels."¹ They were bound for the scenic New Hampshire mountain resort of Bretton Woods where they would attend the United Nations Monetary and Financial Conference, a meeting of 44 countries convened by US President Franklin D. Roosevelt to lay down the rules for the new post-war international economic order.

The inaugural session of the conference took place in the Grand Ballroom of the Hotel Washington, which easily held the hundreds of delegates. Henry Morgenthau, the US Secretary of the Treasury and president of the conference, read a welcoming message from Roosevelt. Morgenthau's opening speech set the tone for, and indeed embodied the spirit of, the gathering. He reminded the delegates of "the great economic tragedy of our time", the Depression, and recalled how the resulting "bewilderment and bitterness [became] the breeders of fascism and finally, of war."²

Morgenthau envisaged the "creation of a dynamic world economy in which the



World Bank headquarters, Washington, DC.

peoples of every nation will be able to realize their potentialities in peace... and enjoy, increasingly, the fruits of material progress on an earth infinitely blessed with natural riches." He emphasized the "elementary economic axiom . . . that prosperity has no fixed limits. It is not a finite substance to be diminished by division." He concluded: "The opportunity before us has been bought with blood. Let us meet it with faith in one another, with faith in our common future . . ." The 700 delegates rose to leave the Grand Ballroom, as the band — yes, there was a band — played "The Star-Spangled Banner."

Here, in a nutshell, was the shared vision of Bretton Woods, a vision that gave birth to two new institutions: the International Bank for Reconstruction and Development (IBRD) and the International Monetary Fund (IMF).

A Unique New Venture

The International Bank for Reconstruction and Development — the World Bank,

as it came to be known — was an unprecedented institution. Although it has grown immensely over the last few decades, the fundamental structure set out in its Articles of Agreement remains unchanged. The charter described the most general organizational principles and goals, and left most of the details of operations to be worked out by the Bank's management and Board of Executive Directors. The main purposes of the Bank were "to assist in the reconstruction and development of territories of member nations by facilitating the investment of capital for productive purposes" and "to promote the long-range balanced growth of international trade . . ." (Article I). It would do this by guaranteeing private investments as well as lending directly from its own capital. Reconstruction and development were to be of equal priority in the Bank's activities.

The original capital of the Bank was set at \$10 billion, the equivalent of at least \$70 or \$80 billion in 1993. This "huge sum", as one of the Bretton Woods delegates observed, "far exceeded anything the world has ever known in this field."³ Twenty per cent of the capital subscriptions would be paid in by member countries, and the remaining 80 per cent of the capital would be "callable" as a guarantee. The ratio of "paid-in" to "callable" capital has decreased over the years; as of 1993, the Bank's total callable capital was \$165.59 billion, of which only \$10.53 billion was paid-in.⁴ This guarantee by major industrialized nations (the Bank's callable capital) allows the Bank to raise

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money for lending by borrowing in international capital markets; the Bank charges borrowers a rate of interest typically 0.5 per cent above its own cost of borrowing, pocketing the difference to pay its own operating expenses and to add to reserves.

Permitted only to lend for "specific projects" — in practice, dams, highways, power plants and so on — "except in special circumstances", the Bank must "ensure that the proceeds of any loan are used only for the purposes for which the loan was granted, with due attention to considerations of economy and efficiency and without regard to political or other non-economic influences or considerations" (Article III Section 5(b)).

The prohibition on consideration of "political" and "non-economic" considerations in the Bank's operations has proven to be one of the most important provisions in the charter. Article IV, Section 10, states: "The Bank and its officers shall not interfere in the political affairs of any member nor shall they be influenced in their decisions by the political character of the member or members concerned. Only economic considerations shall be relevant to their decisions, and these considerations shall be weighed impartially to achieve the purposes [of the Bank] stated in Article I."

The governance of the Bank (and of its partner organization, the IMF) is also unique. All the powers of the Bank are vested in the Board of Governors, one governor representing each member country. The governors of the Bank (and the IMF) are usually the finance ministers or presidents of the central banks of their respective nations. The governors formally choose the Bank's president, but, in practice, the president has always been a US citizen and is chosen by the US government, usually by the Treasury Department. (The head of the IMF is traditionally a European.) The annual Bank/Fund meetings are the occasions on which all the governors of both institutions convene. On a day-to-day basis, most of the powers of the governors are delegated to the Board of Executive Directors.

Originally there were 12 executive directors of the Bank, representing its 44 founding member countries. The Bank's charter provides that the five biggest shareholders of the Bank each appoint their own executive director; the remaining directors represent several countries each, and are elected by those countries. As the Bank has added new members (they totalled 176 in 1993), the number of

executive directors has grown to 24. Their voting power is roughly proportional to the amount of money the member countries they represent contribute to the Bank. The US vote originally counted for 36 per cent, but is now down to about 17.5 per cent. In 1993, the 10 richest industrialized countries controlled 52 per cent of the votes. The executive directors reside in Washington, meet frequently (at least weekly) and must approve every loan and major policy of the Bank. Normally decisions by the Executive Board require a simple majority of votes, but today any

From the outset, the Bank was plagued by an embarrassing lack of "bankable" projects. No-one wanted its loans. Undeterred, it set about creating a demand for them.

action to change the Articles of Agreement requires the approval of at least three-fifths of the members and 85 per cent of the total voting shares — a formula that favours the wealthier countries of the North.⁵

No Role for the Bank

It was a general expectation that the Bank's early activities would focus on European reconstruction, and that its most important function would be that of guaranteeing private investment; it was thought that direct lending would be at best a secondary activity.⁶ But as an agent of reconstruction, the Bank was stillborn. What war-torn Europe needed was not interest-bearing loans for specific projects that required lengthy preparation, but the rapid disbursement of grants and concessionary loans (that is, loans with very low or no interest), to be used for balance of payments support and desperately needed imports for basic needs. In all, the Bank made only four reconstruction loans — to France, The Netherlands, Denmark and Luxembourg — totalling \$497 million.* It was the US-initiated Marshall Plan, not the Bank, that was the engine of recon-

*figures for historic dollars throughout this article have not been adjusted for inflation.

struction: by 1953, the Bank had lent only a total of \$1.75 billion (of which \$497 million was for reconstruction), while the Marshall Plan had transferred \$41.3 billion.⁷

Indeed, from its outset, the Bank was plagued by an embarrassing lack of quality, "bankable" projects being submitted for prospective loans. According to the Bank's annual report for the period 1947-48, "the number of sound, productive investment opportunities thus far presented to the Bank is substantially smaller than was originally expected."⁸ Rather than question the need for the Bank's services, however, the report blamed its potential borrowers for lacking technical and planning skills.

The Politics of Influence

Lacking a demand for its projects, either in Europe or elsewhere, the Bank set about creating one. From the 1950s onwards, a primary focus of Bank policy was "institution-building", most often taking the form of promoting the creation of autonomous agencies within governments that would be continual World Bank borrowers. Such agencies were intentionally established to be relatively independent financially from their host governments, as well as minimally accountable politically — except, of course, to the Bank.⁹

In Thailand alone, 101 World Bank loans, totalling some \$4.374 billion over a 30-year period, have fostered the creation and expansion of several powerful, semi-autonomous state agencies including the state electricity authority, EGAT; the Industrial Finance Corporation of Thailand (IFCT); and the National Economic and Social Development Board (NESDB).¹⁰ The first two agencies are among the most important entities promoting and subsidizing industrial development, and the NESDB oversees all public investment planning in Thailand. Similarly, between 1949 and 1972, 36 of the Bank's 51 loans to Colombia supported autonomous agencies that the Bank had either established or strengthened.¹¹

With considerable financial assistance from the Ford and Rockefeller foundations, the Bank also created in 1956 the Economic Development Institute (EDI) to offer six-month training courses in the theory and practice of development for senior officials from borrowing countries. In subsequent years, EDI expanded

its offerings to include more practical instruction on World Bank techniques for project appraisal and long-term country lending strategies. By 1971, more than 1,300 officials had passed through EDI, a number of them already having risen to the position of prime minister or minister of planning or finance in their respective countries.¹²

The creation of such patronage networks has been one of the World Bank's most important strategies for inserting itself in the political economies of Third World countries. Operating according to their own charters and rules (frequently drafted in response to Bank suggestions), and staffed with rising technocrats sympathetic, even beholden, to the Bank, the agencies it has funded have served to create a steady, reliable source of what the Bank needs most — bankable loan proposals. They have also provided the Bank with critical power bases through which it has been able to transform national economies, indeed whole societies, without the bothersome procedures of democratic review and discussion of alternatives.

The political consequences of this strategy have been far-reaching. Given the unequal power of the Bank and the borrowing government, and the Bank's technocratic bias, a decision-making process has evolved which, at the international level, has given the Bank some of the powers of a surrogate government. At the national level, the implications are no less worrying: a case study prepared by the International Legal Centre (ILC) in New York of the Bank's involvement in Colombia between 1949-72 concludes that the autonomous agencies established by the Bank have had a profound impact on the political structure and social evolution of the entire country, weakening "the political party system and minimizing the roles of the legislature and the judiciary."¹³

Another strategy that has enabled the Bank to increase its influence has been its practice, starting in the late 1950s, of mobilizing other aid agencies into country consortia or consultative groups, whose purpose is to coordinate and programme all foreign assistance to a given country. These country consortia and groups include: the national foreign aid agencies of industrialized nations, such as the US Agency for International Development (USAID) and the German Corporation for Technical Assistance (GTZ); other multilateral development

banks; and multilateral aid agencies of the United Nations, such as the UN Development Programme (UNDP) and its Food and Agriculture Organization (FAO). They meet annually or semi-annually, often in Washington or Paris. By 1971, the Bank chaired 16 of these country aid coordination groups, including those for India, Pakistan, Thailand, Malaysia and East Africa, and was influential in several others, such as that for Indonesia.

Thus, by the 1970s, the Bank had established unique and unprecedented mechanisms for continual intervention in the internal affairs of borrowing countries. It would be hard to find a more succinct definition of politics. Yet, the Bank adamantly denies that such interventions are political: on the contrary, by insisting that politics has nothing to do with power structures, and that economic and political matters exist in separate, walled-off spheres, the Bank has used those articles in its charter that forbid it from interfering in the political affairs of its member states to head off criticism that it is acting politically. In 1966, for example, the Bank directly defied a resolution of the UN General Assembly calling on all UN-affiliated agencies — including the Bank — to cease financial support to South Africa's apartheid regime. But the Bank argued that Article IV legally obliged it not to follow the UN resolutions. Even a personal plea from the UN Secretary General U Thant to World Bank President George Woods was of no avail.

Supporting the Unsupportable

Article IV, however, has not prevented the Bank from refusing to lend to Brazil and Chile when their governments were not to the Bank's liking. Thus, the Bank refused to lend to the democratically-elected Goulart government in Brazil in the early 1960s, but, following the 1964 military coup (which installed a 20-year military dictatorship), lending rose from zero to an average \$73 million a year for the rest of the 1960s and reached levels of nearly half a billion dollars a year by the mid-1970s.¹⁴ Chile under the democratically-elected regime of Allende received no Bank loans, but, following Pinochet's military coup in 1973, the country suddenly became creditworthy.

The predilection for supporting anti-democratic regimes that tortured and murdered their subjects became a hall-

mark of the Bank during the 1970s, under the presidency of Robert McNamara, the former chief of the Ford Motor Company and US Secretary of Defense during the Vietnam War. Thus, in 1972, while the Bank was cutting off all loans to Allende's Chile, it was considering a loan to its newest member, Romania, at McNamara's personal urging. The Romanian government's penchant for large infrastructure loans was shared by the Bank. Indeed, Bank lending coincided with a marked increase in state centralization of planning and control in what was already one of the most centralized and planned economies in the world.¹⁵

In 1979, the Bank published, in a sanitized form, its country economic study on Romania. It is an astounding document, even without the historical hindsight of the 1990s. A section entitled "Importance of Centralized Economic Control" approvingly cites Ceauçescu's pronouncements on the necessity of state planning, and accepts uncritically the government's prediction that per capita income in 1990 would reach \$3,000 in 1963 terms or about \$15,000 in 1992 dollars.¹⁶ In fact, Romania emerged in the Bank report as a virtual model for achieving economic growth. "It remains probable that Romania will continue to enjoy one of the highest growth rates among developing countries over the next decade and that it will largely succeed in implementing its development targets," stated the report, concluding that "if all plans are fulfilled, Romania will have taken off and become an industrialized economy by 1990, on a level with many other countries considered to be developed."¹⁷

The Bank made several unprecedented exceptions for the Ceauçescu regime. The secretive Romanian government refused to share information on key economic indicators with the first Bank economic mission to the country, and the Bank could not even determine Romania's creditworthiness according to customary criteria.¹⁸ The World Bank started lending to Romania even though the country did not settle its outstanding Second World War debts with foreign creditors until 1975; yet the Bank had used the war debts issue as grounds for refusing to lend to Chile for several years in the late 1940s.¹⁹

Some in the Bank's senior management had trouble seeing the economic logic of lending to Ceauçescu. According to former Bank staff member Art Van de Laar, at one meeting McNamara re-

sponded to questions on Romania with a statement that he had "great faith in the financial morality of socialist countries in repaying debts." At which point a Bank vice-president acerbically observed that "Allende's Chile had perhaps not yet become socialist enough."²⁰

Romania quickly became one of the Bank's bigger borrowers. Over eight years (1974-82) it received \$2.364 billion.²¹ In 1980 it was the Bank's eighth biggest borrower out of a total of 19; in 1982, it received \$321 million, making it the 11th biggest borrower for that year out of a total of 43.²² After 1982, Ceauçescu's alarm at the size of the country's foreign debt led him to refrain from further borrowing and to undertake an austerity programme to repay the country's loans, a programme so harsh that it would have been politically possible only in a police state.



Robert McNamara, President of the World Bank, 1968-1981. More than any of his predecessors — or successors — McNamara made the Bank into what it is today. Obsessed with statistical tallies and numerical data to measure progress, his grandiose vision for alleviating poverty depended on a fatal hubris about the Bank's ability to know, plan and direct the evolution of human societies and the natural systems they depend on.

The Master Planner

Early Bank lending was biased not towards the needs of borrowing countries, but towards what was easiest for the Bank to lend for. Power and transportation projects were easily appraised, involved the transfer of standard technologies and planning procedures, and at least partly filled the dearth of "bankable projects".²³ Convenience was to remain a constant priority in the Bank's lending policy, and until this day about half to two-thirds of Bank projects involve infrastructure such as dams and roads.

However, under Robert McNamara, President of the Bank from 1968 to 1981, the Bank began to build up its portfolio of "new-style" poverty projects. The main focus was on rural development and agriculture, a sector which grew from 18.5 per cent of Bank lending in 1968 to 31 per cent, or \$3.8 billion, in 1981.²⁴ Urban poverty alleviation projects (usually involving upgrading of slums by installing water pumps, electricity and so on) and education and health projects also became for the first time a significant part of the Bank's portfolio.

More than any of his predecessors — or successors — Robert McNamara made the Bank into what it is today. McNamara

had an almost obsessive faith in quantification, rationalism, and in universally-valid managerial methods that could be brought to bear on any problem. "Running any large organization is the same, whether it's the Ford Motor Company, the Catholic Church, or the Department of Defense," he observed in the early 1960s. "Once you get to a certain scale, they're all the same." "Management," he declared in 1967, "is the gate through which social and economic and political change, indeed change in every direction, is diffused throughout society."²⁵

McNamara's approach greatly exacerbated already existing trends in the Bank which reinforced the growth of its own institutional power while ignoring the complex and diverse social and natural reality of developing nations. Easily quantifiable targets were defined as indicators of progress, and complex social realities were reduced to "figures and numbers of target groups, beneficiaries, incremental output, improvements in productivity, changes in incomes, and so forth."²⁶ The

same technologies were applied everywhere, with predictable results: they were usually inefficient at best, and often so environmentally and socially inappropriate as to preordain many projects to failure.

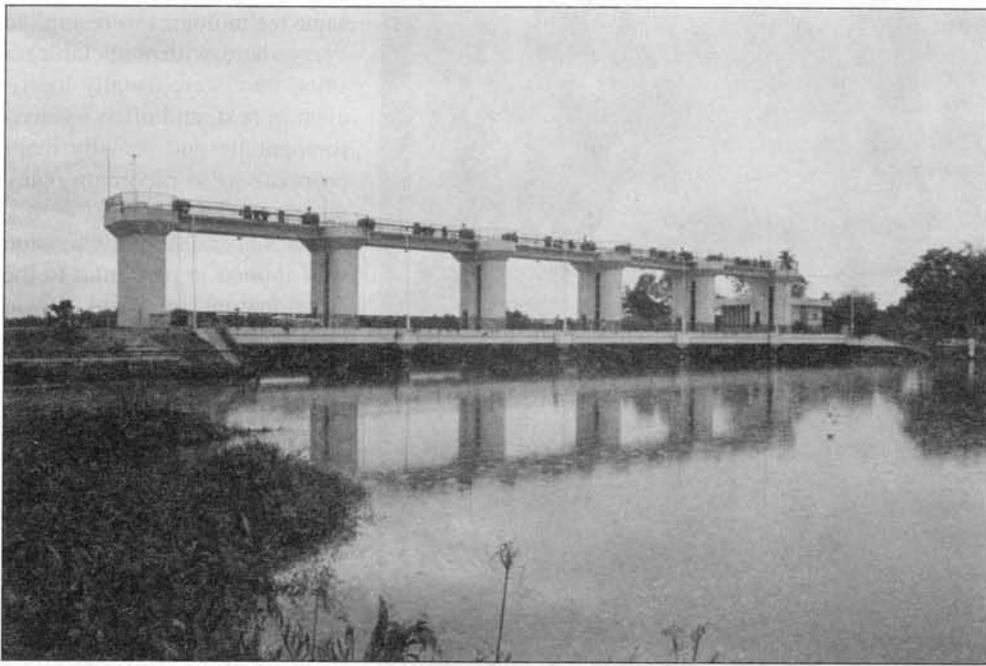
McNamara's top-down vision was applied in particular to the development of Third World countries. In 1970, he outlined his proposals for what he called "Country Economic Missions":

"These will be regularly scheduled, thoroughly staffed, comprehensive missions whose mandate will be to assist the member government to draw up an overall development strategy which will include every major sector of the economy, and every relevant aspect of the nation's social framework. Once the mission is completed, we will promptly produce for use by all of the parties concerned a thorough Country Economic Report which will serve as a profile of the country's progress and of its overall development plan."²⁷

The Bank would also prepare five-year master country lending plans, set out in "country programming papers" (CPPs); the CPPs set targets and priorities

for all Bank lending in a given nation, based on the work of the country economic missions and ensuing reports. These economic reports and CPPs were to rank among the most confidential and closely-held documents in the Bank, apart from internal memoranda. In some cases, even ministers of a nation's cabinet could not obtain access to these master plans, which in smaller, poorer countries were viewed as international decrees on their economic fate; nor could the Bank's directors, who were effectively reduced to a rubber stamp. McNamara would not even allow them to review in advance his major policy speeches at the annual Bank/Fund meetings.²⁸ As never before, the Bank became accountable only to itself.

This vision of global central planning, under the aegis of the Bank, assumed and greatly reinforced the notion that national and international bureaucracies have the right to direct all "relevant" aspects of social, economic and political evolution. It is no exaggeration to call such a project Faustian.



A World Bank-funded irrigation scheme in West Malaysia. Bank lending has been biased not towards the needs of borrowing countries, but towards what is convenient for the Bank to administer. Big dams and infrastructure projects are easily appraised and involve the transfer of standard technologies.

The Pressure to Lend

Towards the end of McNamara's tenure in the late 1970s, it was clear that the World Bank had become a self-serving bureaucracy — an end in itself, driven by an institutional culture of expansion and a will to power for its own sake. Within the Bank, it was difficult, if not impossible, for lower-ranked staff to question the viability of projects or, in the words of one former Bank employee, "for Bank staff to show pessimism once management has gone on public record."²⁹

At the heart of this institutional culture was a pressure to lend, regardless of project quality, that still pervades the Bank. In part, this pressure is due to the Bank never having to answer directly for the disastrous financial consequences of its staff emphasizing quantity over quality in lending in the way that a private institution would have to. Repayment of its loans has no connection whatsoever with the economic performance of projects: for developing nations, the Bank and the IMF have first priority for repayment, since these countries know that access to all private international credit is contingent on staying on good terms with the Bank and the Fund. However uneconomic a project, the debt must be repaid if the country is to receive further credit. Project quality control is further undermined by annual lending targets, which also exacerbate the tendency to lend as

much as possible as quickly as possible — and mitigate against scrupulous observance of the Bank's environmental and social guidelines.

External pressures on the Bank also contribute to the pressure to lend regardless of project quality. Government ministers and agencies in developing countries, for example, have a vested interest in seeking large loans for big projects, since such loans provide enticing opportunities for political pay-offs — not to speak of outright corruption.

The energy sector provides the pre-eminent example of this dynamic. Despite the overwhelming economic and environmental advantages of end-use efficiency and conservation investments, Bank staff and developing country energy bureaucrats have strong incentives to promote much larger, inefficient megaprojects such as large dams and power plants. A politically-rational energy minister who wishes to become prime minister would be foolish to sponsor a plan to install energy-efficient lightbulbs and irrigation pumps, when four or five times as big a loan can be secured from the World Bank for a gigantic dam to produce the same amount of power, with immensely more attractive opportunities for building political patronage. By the same token, a World Bank country director would have to be naïve to promote an energy efficiency loan that would alienate the developing country's energy min-

istry he or she is trying to cultivate, and at the same time move only one-quarter the amount of money for a greater amount of staff work.

Although the Bank's preferred creditor status has protected it from major defaults up until now, the threat of defaults by important borrowers has become more real in recent years.³⁰ At the end of the Bank's 1993 fiscal year, some \$2.5 billion in loans from four countries (Congo, Liberia, Iraq and Syria) and the former Yugoslavia were in "non-accrual status" — that is, overdue. The non-performance of these loans reduced by nearly 18 per cent the Bank's net income for the fiscal year 1993, which was \$1.13 billion.³¹

If one of the Bank's major borrowers — such as India, Brazil or Indonesia — were to default, this would put between 11 per cent and 13.5 per cent of the entire portfolio in non-accrual status, and leave the

Bank with its first annual loss. In this event, the Bank probably would have to tap its callable capital, causing consternation in the US Congress and other national parliaments of its donor countries. (The callable capital guarantees for the World Bank are like the guarantees of the US federal government for the savings and loans institutions — they are not included in the budget until the crisis breaks.) The Bank's credit rating on international capital markets would be lowered, and its financial credibility permanently undermined. In the early 1990s, both Brazil and India are faced with enormous financial crises — uncontrolled inflation in Brazil and a balance of payments and adjustment crisis in India — which make default a real possibility.

The perceived need to infuse adequate foreign exchange into nations with drastic balance of payments difficulties has further encouraged increased lending, as well as a reluctance to halt disbursements because of violations of Bank policies. Trapped on a treadmill of its own making, the Bank has one overarching priority: to keep the money flowing.

There is no more telling example of this dynamic than the phenomenon which takes place every June, in the waning days of the Bank's fiscal year. It is called the "bunching season", a time when it is difficult to reach many Bank staff as well as executive directors. The bunching season brings a final rush to push before the

Executive Board as many loans as possible for approval before the beginning of a new annual lending cycle. In a few frenetic weeks, the Board approves as much as a full quarter of the Bank's annual lending, some five to six billion dollars.

Bureaucratic Schizophrenia

By the early 1990s, the Bank was at war with itself and was showing signs of acute bureaucratic schizophrenia. The main antagonism was between the Bank's "Operations" staff, who identify and prepare loans, and its "Policy, Research and External Affairs" divisions. Operations was the part of the Bank where the action was, where careers proceeded on the fast track; many Bank staff viewed Policy, Research and External Affairs as a dead end, devoid of prospects.

Such disdain goes a long way towards explaining why the Bank has failed over several decades to respond to criticism of its environmental and social policies voiced by both Western environmentalists and the supposed beneficiaries of its projects, the poor in the South. In the early 1970s, for example, the Bank established an internal Operations Evaluation Department (OED) with the express function of carrying out independent audits of completed projects and preparing recommendations to ensure that errors were not repeated. Many of the most damning indictments of Bank performance can be found in OED studies; yet OED is one of the most marginalized and impotent parts of the Bank, viewed by many Bank staff as a professional purgatory, a dumping ground for those who cannot be fired or who are exiled from Operations.

The Bank's Environmental Department has suffered a similar fate. Set up in 1987, in response to the escalating criticism of the environmental impact of its policies, the central Environment Department contains half of the Bank's 100-plus environmental staff and is now part of the Policy, Research and External Affairs complex; the other half are placed in five environmental divisions for the Bank's six Operations regions. The regional environmental staff are supposed to exercise closer scrutiny over projects, but, hampered by both limited budgets and limited authority, they are all but powerless to stop ambitious country directors from riding roughshod over Bank policies. The Environment Department itself inhabits a world of paper, publishing up-

beat accounts of strengthened internal directives and producing volumes of environmental issues papers and action plans, while the lending juggernaut lumbers ahead on a separate planet called Operations.

Fifty Years is Enough

As the World Bank slouches towards its 50th anniversary, more and more voices are questioning its credibility and its legacy. On May 27, 1993, 11 African heads of state gathered in Libreville, Gabon, where they heard US civil rights leader Jesse Jackson denounce the effects of Bank policies on the poor in the South. "They no longer use bullets and ropes. They use the World Bank and the IMF," Jackson declaimed. In June 1993, Republicans in the US House of Representatives proposed an amendment to eliminate all US funding of the IBRD. The motion was defeated by only two votes.

If the Bank is now starting to look beleaguered, it is because it has isolated itself. Sitting in their sealed offices in Washington, or in their five-star hotels in tropical capitals, its managers are so far removed from the consequences of their actions that they do not know why their plans and programmes fail, nor do they give staff incentives to care.

The attempt over the last half-century to superimpose the World Bank's make-believe vision of the world upon the day-to-day lives of real people has had disastrous consequences for hundreds of millions of the poor and marginalized, along with untold numbers of non-human species and their habitats. Fifty years is a short time in the history of the world, but as far as the World Bank is concerned, it has already been long enough.

This article is drawn from Bruce Rich's book, *Mortgaging the Earth: The World Bank, Environmental Impoverishment and the Crisis of Development*, to be published by Beacon Press, 25 Beacon Street, Boston, MA 02108, USA in February 1994. It will be published in Britain in May 1994 by Earthscan, 120 Pentonville Road, London, N1.

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Municipal Waste Incineration

Wrong Question, Wrong Answer

by

Paul and Ellen Connett

In the face of widespread public concern, renewed efforts have been made over the last decade to promote the incineration of domestic waste as a clean technology. However, although the level of certain atmospheric emissions from modern incinerators is much lower than in earlier models, the higher combustion temperatures involved can cause the formation of other chemicals — and there is still the residue of toxic ash to dispose of. Furthermore, since these facilities require a constant stream of waste to justify their considerable expense, municipal authorities have no incentive to find ways of minimizing waste.

There are two principal means of disposing of the mountain of unrecycled waste produced by industrialized nations — landfill and incineration — and over the last 40 years the pendulum of policy has swung back and forth between them. By 1960, the US was burning about 30 per cent of its domestic waste. But public concern about air pollution from these primitive furnaces forced their closure so that by 1980 only 10 per cent of US municipal waste was being burnt.¹

However, during the 1980s, the public became increasingly resistant to the prospect of more land being used for landfill; in 1991 it was estimated that by the end of the century most of the Eastern states would have used up all their acceptable landfill capacity. Advocates of incineration seized the opportunity to claim that newer, more technologically advanced facilities could now burn waste without causing pollution — and, furthermore, that the process could also be used to produce energy. As a result, by 1990, the figure for waste incineration had crept back up to 14 per cent of the total US waste-stream.² Industrial interests are now persuading many authorities that incineration is risk-free and convenient. These claims need to be scrutinized.

The Advantages of Incineration

Superficially, incineration can be an attractive solution to waste disposal, and its advocates draw on a well-recited list of arguments for the technology that can appeal to local authorities seeking an alternative to landfill:

- Incineration reduces the volume of material going to landfill. The figures usually quoted by industry are a 75 per cent reduction in weight and a 90 per cent reduction in volume.
- It concentrates the toxics into a dense powdery ash, which is far more homogenous than the original rubbish, and easier to manoeuvre.
- It destroys most of the organic material which when buried in landfill can cause methane generation and leaching, as well as unpleasant smells and vermin problems.

- Modern rubbish incinerators fitted with state-of-the-art pollution control equipment emit far less air pollution than incinerators built in the 1960s, or even in the early 1980s.
- Several large engineering firms are eager to provide local municipalities with teams experienced in legal work, risk-assessment and public relations.
- Incineration does not require a shift in the patterns of behaviour of consumers, producers and waste handlers previously dependent upon landfill, so local municipalities do not have to change people's outlook nor reorganize community infrastructure.
- Most modern incinerators yield energy in the form of either steam or electricity, the sale of which can offset some operating costs.

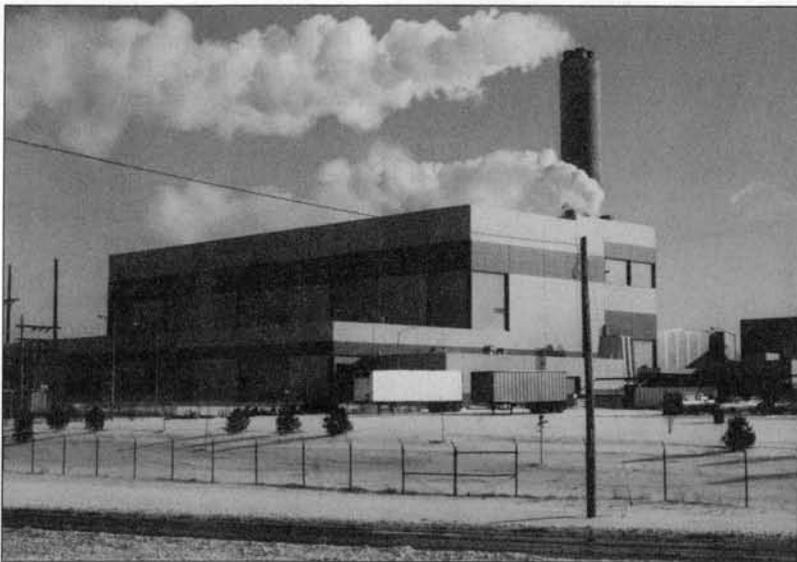
Coping with the Ash

However, as concerned citizens have pointed out and many municipalities have accepted, incineration is by no means as clean as its advocates claim. Incinerators do not make waste disappear: they reduce it to ash and to atmospheric emissions, both of which are potentially hazardous.

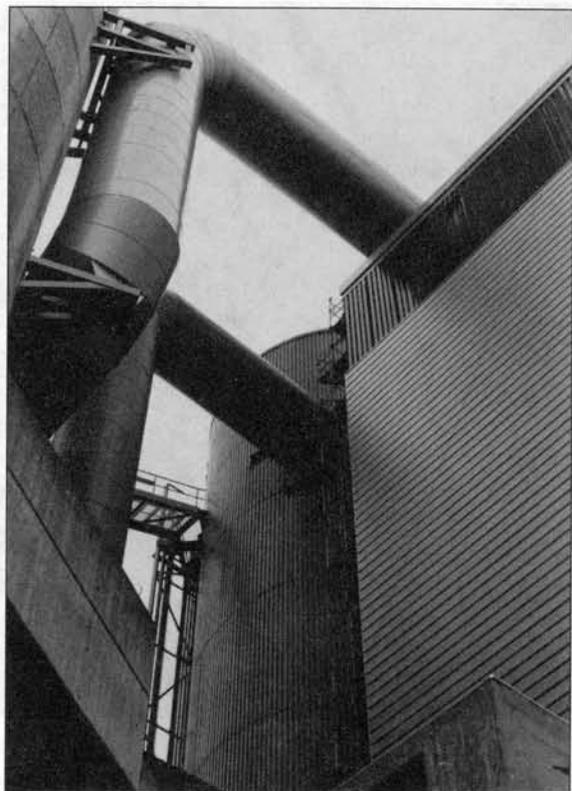
Often, decision-makers are misled by the claim that there is a 90 per cent volume reduction when rubbish is burned in an incinerator and conclude that their dwindling landfill space will stretch 10 times as far. This is not the case. The figure of 90 per cent refers to a strict comparison between the waste entering the incinerator and the ash leaving it. It does not include rubbish that cannot be burned or that is missed when the facility is closed for repairs, and does not take account of the fact that when rubbish goes into a landfill, it gets compacted. When such factors are taken into account, the overall volume saving with an operating incinerator is somewhere between 60 and 70 per cent; the precious landfill space is only stretched 2.5 to 3 times, not the tenfold increase sometimes implied by promoters of incineration.

Moreover, the ash can be toxic. About 90 per cent of it — the so-called bottom ash — remains in the furnace and is collected from grates. The remaining 10 per cent — fly ash — is drawn

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Modern incinerators are designed to look clean . . . but are they? Above: This 2,300 ton-per-day facility in Indianapolis, built by the US's largest incinerator company, Ogden Marten, violated permitted emission levels on over 6,000 occasions between 1990 and 1991. Right: Remedial technology fitted to a Swiss incinerator captures some of the toxic emissions from the smoke but concentrates them in the form of an equally toxic ash.



up in the flue gases and collected in boilers, heat exchangers and air pollution control equipment. Not only are most of the toxic metals captured in the fly ash, but a number of toxic compounds, including dioxins and furans, are actually created on the fly ash particles in a process called post-combustion formation.³

Ironically, this means that the better the air pollution control, the more toxic the ash. Tests conducted on the Commerce incinerator in California, for example, reveal that lead and cadmium leached from the ash samples during the first two years of operation were considerably lower than during the next three years.⁴ A simple explanation could be that in the first two years of operation, the plant experienced a number of teething problems which allowed much of the lead and cadmium to escape into the air. It is reasonable to conclude that when operation became more rigorous, increasing quantities of the cadmium and lead were captured and appeared in the ash.

Much of the discussion in the US about the toxicity of ash has focused on the leaching of heavy metals from the ash in tests designed to mimic the conditions in landfills. The incinerator industry, besides lobbying for exemption from these tests, has adopted procedures such as treating the ash, prior to the test, with phosphoric acid, which temporarily ties up the lead in the form of lead phosphate, an insoluble compound. Because of this preoccupation with leaching, the absolute levels of toxics such as heavy metals and dioxins in the ash — especially the fly ash — have largely been ignored, and the incinerator industry has been able to claim that the ash is “non-toxic”, “inert” or “sterile.” Yet workers at a Detroit incinerator (which went on line in December 1988) walked off the job complaining of nosebleeds, nausea and rashes which they put down to exposure to the ash. When dust from the plant was tested, it was found to contain very high levels of lead.⁵ Other studies have found high dioxin levels in the blood of incineration workers.⁶

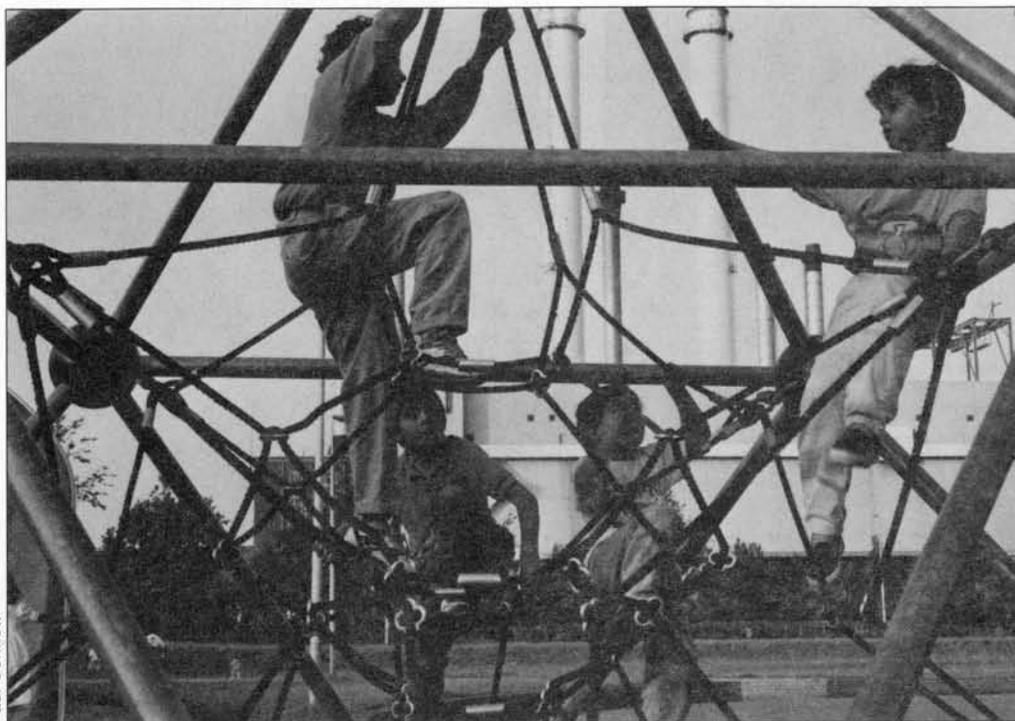
Disposal of toxic ash can be problematic and expensive — the average cost in the Mid-West for disposing of a ton of

hazardous waste is \$210, compared to \$23 a ton for ordinary waste.⁷ There have been a number of attempts by the incinerator industry in the US to utilize the ash for roadbeds, ocean barrier reefs and concrete blocks for building. US environmental groups like the Environmental Defense Fund⁸ and Clean Water Action have strenuously resisted these efforts. The toxics are either permanent, in the case of heavy metals, or highly persistent, in the case of dioxins and furans. In the future, roads may be ripped up, surfaces pulverized and buildings demolished, producing enormous quantities of toxic dust. These dangers are not as far-fetched as it might at first seem. Some children of wealthy families moving into inner-city housing contract lead poisoning when their parents sand down old lead paint during their renovation efforts. The people who painted these old houses with lead paint are probably long gone, but the legacy of the toxicity lives on.

Airborne Emissions

Doubts also exist about the quality of airborne emissions from incinerators. To maintain low emissions, an incinerator must be operated meticulously and air pollution control equipment optimally maintained. Much of the airborne emissions data from modern incinerators come from measurements made under ideal conditions, for example, when the plant is brand-new or when the operators are seeking to obtain their operating permits. Companies know exactly when they are going to be tested and can ensure that their most qualified operators and engineers are present to achieve optimum burning conditions. This kind of drill cannot continue 24 hours a day, 365 days a year, when inspectors and regulators are not present.

Incineration flue gases contain a considerable amount of very hot hydrogen chloride which rapidly eats through most metals. Grates wear out more frequently than expected and bags in the fabric filters burn out and break, boiler tubes rupture and



Children playing in front of an incinerator at The Hague in The Netherlands. There is clear evidence that toxic waste incinerators tend to be sited in poorer neighbourhoods — frequently those of ethnic minorities. The same may be true of municipal waste incinerators. “Whether it’s a landfill, a military installation, whatever, you’re not going to find it in the predominantly white neighbourhoods,” says Tony Anaya, former governor of New Mexico. “They’re always in minority neighbourhoods, simply because those neighbourhoods have not had the political clout and/or the resources to battle it. So the decision has always been to go to the point of least resistance, and that’s the minority community.”

other piping corrodes more often. All these problems require more money for preventative maintenance.

In the US, modern incinerators have often had serious problems with their air pollution control equipment. Recently, the US Environmental Protection Agency (EPA) reported that a modern incinerator in Indianapolis exceeded its permitted pollutant limits over 6,000 times in less than two years (June 1990 to September 1991)⁹. On November 26, 1991, three of New Jersey’s four modern municipal waste incinerators were fined for violating their airborne emission permits. From August to November 1991, New Jersey levied fines totalling \$679,200 against these three incinerators. The violations included: unacceptably high emissions of mercury, sulphur dioxide, nitrogen oxide and carbon monoxide; by-passing pollution controls; operating below minimum temperature requirements; and allowing burner ash to escape into the environment.¹⁰

Dioxins and Furans

Dioxins and furans present a special problem for the incineration industry. Until recently, the public had been informed that any danger from dioxin emissions could be solved simply by assuring good combustion in the furnace. However, in 1985, it was discovered that dioxins could be formed in an incinerator after the hot gases had left the combustion chamber.¹¹ Researchers have found that simply heating fly ash from a rubbish incinerator to about 300° Centigrade in an inert atmosphere led to a tenfold increase in dioxin levels in the ash.¹² Similarly, tests on the Prince Edward Island incinerator in Canada indicated that while gases leaving the combustion chamber contained very little dioxin, those entering the stack contained considerably higher levels, indicating their formation somewhere between the furnace and the stack.¹³

Since 1985, several different strategies have been devised to minimize dioxin emissions. The most popular has been the semi-dry scrubber which involves the introduction of a lime suspension which evaporates when it comes into contact with

the hot flue gases, leaving behind a very fine dust. This dust provides nucleation centres on which dioxins, related compounds and heavy metals can condense. These particles are then captured either in an electrostatic precipitator (ESP) or in fabric filters. Engineers argue about the relative merits of ESPs and fabric filters. On the one hand, ESPs are considered less effective for the control of very small particles, but very robust under a range of operating temperatures. The fabric filters, on the other hand, are better at removing the smallest particles, but can prove trickier to operate because they can break, burn out or clog up.

High dioxin emissions have been measured at municipal waste incinerators fitted with ESPs. According to the Minnesota Pollution Control Agency:

“Because of concerns that dioxin compounds might form within the stack [of the 75 ton-per-day Red Wing incinerator], the agency required testing for dioxins in the air emissions before they entered the electrostatic precipitator and as they left the system. In the three tests . . . the average level of dioxins in the emissions entering the device was 2.2 nanograms per dry standard cubic metre; the average leaving the device was 23.8.”¹⁴

In July 1989, government officials in The Netherlands banned sales of dairy products and meat from 16 farms downwind of the Rijnmond municipal waste incinerator in Rotterdam because of elevated levels of dioxins and furans found in the milk tested from these farms.¹⁵ The only pollution control device on the incinerator was an ESP. The Dutch have since been engaged in a very costly retrofit of all of their 12 incinerators.

At present, the total amount of dioxins emitted by incinerators is grossly underestimated. Test results from the Columbus, Ohio, incinerator showed that dioxin emissions from just one of the six furnaces equalled the 200 grammes that EPA officials had estimated for all 140 US rubbish incinerators combined.¹⁶ In Germany, the Ingolstadt incinerator alone was calculated to be emitting 207 grammes per year, yet the German EPA estimates that “the combined annual dioxin output nationwide from all 47 incinerators would be only 400 grammes”.¹⁷

Mercury

The elimination of mercury from emissions has been another recurrent problem. In experiments carried out by Environment Canada in Quebec City in 1985, very good results were obtained for the removal of dioxins and heavy metals using a combination of a semi-dry scrubber and a fabric filter.¹⁸ However, when this approach was tried on a newer plant in Stanislaus County, California, it did not remove any mercury. One of the reasons suggested was that the ageing Quebec City plant was not completely burning the rubbish in the furnace and the carbon in the resulting soot was capturing the mercury. The modern plant with better combustion resulted in less soot and thus no mercury capture.

Because of this experience, new plants are being fitted with dry lime scrubbers which inject a combination of lime and activated carbon dust in front of the fabric filters. All plants already in operation in the US and the majority in Europe, however, are allowing most of the mercury to escape from their stacks. As a result, rubbish incineration represents the second largest human-made source of mercury entering the environment, after coal burning. According to one survey, rubbish incineration is ranked as the major source of mercury entering the environment for 11 of the 37 states in the US that have rubbish incinerators.¹⁹ This has raised alarms about mercury contamination of lakes and wetlands and the build-up in aquatic food chains. This is particularly important since only very small amounts of mercury in water can lead to high levels of mercury in fish high in the food chain.²⁰

Health Effects

The misplaced confidence of engineers and regulators in the past has left the environment and our bodies with a legacy of dioxin and mercury contamination. According to a Dutch government report of July 14, 1989: "The contribution of waste incineration to PCDD (dioxin) and PCDF (furan) contamination of the general population amounts to approximately 30 per cent . . . Locally in the vicinity of facilities, this may be considerably higher. Waste incineration constitutes the greatest point source of emission of these substances".²¹

Even more alarming than the levels in our food are the levels of dioxin in breast milk. The Munich Region of the German Medical Association stated in September 1990: "According to the German Health Agency, milk from nursing women is twenty times more contaminated with dioxin than cow's milk. The multitude of contaminants a woman has accumulated in her body over a time span of two to three decades reappears during nursing and is transferred to the baby."²² In Germany, some pediatricians are already telling young women to limit their breast-feeding to three or four months. This suggestion has proved unsettling for many women and doctors — and probably babies as well. As one pediatrician told us, "When you tell a woman to limit her breast-feeding you are looking at the beginning of the end of humanity."²³

Many toxic substances emitted from municipal waste incinerators, including certain dioxins and furans, cadmium, lead and mercury, are known to disrupt the endocrine system (the body's hormonal system). A multidisciplinary group of experts researching endocrine disruption described its effects:

"We are certain of the following: A large number of man-made chemicals that have been released into the environment . . . have the potential to disrupt the endocrine systems of animals, including humans . . . Many wildlife populations are already affected by these compounds. The impacts include thyroid dysfunction in birds and fish; decreased fertility in birds, fish, shellfish, and mammals; decreased hatching success in birds, fish, and turtles; gross birth deformities in birds, fish, and turtles; metabolic abnormalities in birds, fish and mammals; behavioural abnormalities in birds; demasculinization and feminization of male fish, birds and mammals; defeminization and masculinization of female fish and birds; and compromised immune systems in birds and mammals . . . It is urgent to move reproductive effects and functional teratogenicity to the forefront when evaluating health risks. The cancer paradigm is insufficient because chemicals can cause severe health effects other than cancer . . . Impacts on wildlife and laboratory animals as a result of exposure to these contaminants are of such a profound and insidious nature that a major research initiative on humans must be undertaken."²⁴

The knowledge that high-temperature incineration is capable of producing such contaminants should make any prudent person pause before sanctioning more of these plants, until we fully understand the fate, effects and amounts currently being emitted.

A Costly Commitment

Quite apart from their environmental problems, incinerators are extremely expensive to install and run, yet show little economic return. The modern waste-to-energy incinerator with more sophisticated air-pollution control equipment is much dearer than its predecessors. Annual operating budgets are high, extra expense is involved in generating and delivering energy, and there is also the cost of disposing of the toxic ash. Contractual obligations to supply a certain tonnage of waste per year to the incinerator can saddle municipalities with financial liabilities if there is a miscalculation in waste generation or a decreasing waste stream, giving them an incentive to maintain the supply of waste or even import it.²⁵

Little employment is created for the large capital investment needed, most of the jobs being temporary ones during the construction of the facility. Much local public money involved is moved out of the area into the hands of multi-national engineering firms, financiers, legal teams and consultants.²⁶ For example, Seattle paid at least \$1,325,000 to consultants Gershman, Brickner and Bratton (GBB) of Falls Church, Virginia, for planning a proposed 2,000 ton-per-day municipal waste incinerator. GBB also received approximately \$2 million from the Solid Waste Development Authority of St Lawrence County, a poor rural district in New York State. Because of local citizen opposition, neither incinerator was built.

There is little evidence to support claims that placing a rubbish incinerator in a community attracts other companies to site their facilities nearby. If this were the case, there would be much more competition in the US and elsewhere to become the host community for a municipal waste incinerator. Instead, public opinion has tended to resist the establishment of incinerators in local areas. Those who bear the brunt of the risks of the project obtain few economic benefits from doing so.

Public Opposition

During the 1980s, the US witnessed rapid development in the building of municipal waste incinerators. However, opposition to new incinerators from the public and environmentalists also mushroomed, and there have been aggressive campaigns in town after town against the siting of new incinerators. Incinerator construction peaked in 1988, and since 1985, 137 projects have been cancelled or put on hold, over half of the total projected.²⁷ In 1985, the state of California had plans to build 35 incinerators, yet to date they have built only three, while New Jersey planned to build 22 and have only constructed five. Major cities that have cancelled plans for incinerators include: Philadelphia, Pennsylvania; Seattle, Washington; Portland, Oregon; Austin, Texas; San Diego, California; Boston, Massachusetts; and Jacksonville, Florida.

Many citizens distrust the experts who promote incinerators and lack confidence in government agencies' ability to protect them once facilities go on-line. In April 1991, eight major national US environmental organizations and citizens' groups from around the country joined forces to call for a moratorium on giving permits for or expanding municipal rubbish incinerators until the year 2000, and to demand that incinerator ash be classified as a hazardous waste.²⁸

In Europe too, the pace of incinerator construction has slowed dramatically. During the early 1980s, decision-makers in the US were persuaded — often with all-expenses-paid trips to a number of highly sanitized European plants — that Europe had a long, trouble-free history of operating rubbish incinerators and that the technology was popular with citizens and officials. In fact, many Europeans have actively opposed rubbish incinerators. In Flanders in Belgium, citizen pressure has resulted in a five-year moratorium on new incinerators. In The Hague in The Netherlands, citizens organized to defeat a \$700-million incinerator proposed for one of the suburbs. Flushed with victory, they have gone on to organize a national network against all proposed incinerators in the country, as well as calling for operating incinerators to be shut down.²⁹

In Germany, some 500 grassroots groups oppose incineration. During a 12-day period in 1990, over one million Bavarians went to their town halls to sign a petition to place an anti-incineration law on the ballot.³⁰ In February 1991, this referendum was narrowly defeated (by 51 per cent to 46 per cent) after an all-out campaign by the government and incineration companies. Still, the anti-incineration vote won by sizeable margins in all the major cities in Bavaria, including Munich. The government held on only by winning in most of the small villages.³¹

“Renewable Plastics”

Faced with such opposition, European incinerator interests have embarked upon a public relations exercise to present the technology not only as a safe form of waste disposal but also as an environmentally-friendly way of generating energy. “Incineration with energy recovery is environmentally a very attractive option as a contributor to sustainable development” says the Director of the British Plastics Federation, Ron Jones. “Industry must now concentrate on making the general public aware of its benefits”.³² “Plastic waste can . . . be used as a valuable — and renewable — source of energy,” echoes a writer

in the British Petroleum magazine, *Shield*.³³

In fact, waste-to-energy is neither “valuable” nor “renewable”. Incinerator generators are loss-making concerns. The Danish plant at Amager, which burns 300,000 tonnes of waste from Copenhagen and Frederiksberg, generates 425,000 megawatt-hours of energy for electricity and heating, yet only covers 43 per cent of its operating costs.³⁴ As for plastic waste being “renewable”, the vast majority of plastics are derived from exhaustible fossil fuels. Briefly circulating these fuels through society in the form of packaging or other short-life commodities reduces pressure on these resources only momentarily.

Considerably more energy can be saved through alternative strategies such as reuse, recycling or composting than can be obtained by incinerating the same waste.

The loudest voices in favour of incineration come not from the engineering and waste-disposal companies that build the incineration plants, but from the plastics industry: the British Plastics Federation, British Petroleum, the Brussels-based Alliance for Beverage Cartons and the Environment (funded by carton producers Tetra-Pak and Elopak), and others. These organizations have a vested interest in incineration. The main alternative to incineration and landfill is composting, and the only combustible material that cannot be composted is plastic, which comprises only about seven per cent (by weight) of the waste stream.³⁵ Any move towards a universal compost-based system of waste disposal could be very awkward for the plastics industry, which is already beginning to face competition in some areas from throwaway compostable products such as egg-boxes. Furthermore, although some plastics can be recycled, the process is technically difficult, and so far almost all attempts to do so have proved to be economically unviable.

Nonetheless, the attempt by industry to portray waste-to-energy as a “sustainable” technology has borne some fruit amongst authorities. The British government has given waste incineration a boost in the form of generous grants under the “Non-Fossil Fuel Obligation” — legislation designed to encourage the development of alternative energy sources — despite the fact that much of the energy value in waste derives from fossil-fuel based plastics.

In fact, considerably more energy can be saved through alternative strategies such as reuse, recycling or composting than can be obtained by incinerating the same waste. Dr Jeffrey Morris of the Sound Resource Management Group calculates that three to five times more energy can be saved by recycling materials than by burning them.³⁶ Unfortunately, this argument is often lost on local decision-makers, because the energy saved via recycling is accrued to the total national (or global) economy rather than the local economy, whereas incineration yields an apparent energy addition to the local economy. Reuse, though it can be the most efficient strategy of all, is a hidden benefit which often does not show up on anyone's balance sheet.

The Wrong Question

Even if incinerators could be made safe and efficient, this would not make them a sensible option. Modern "state-of-the-art" waste incinerators provide a sophisticated answer to the wrong question: "Where do we put the waste?" The problem is not how to perfect the destruction of discarded resources, but how to recover them.

Many of the pioneering strategies to prevent waste have come from local communities in the US and Europe, frequently as a result of their opposition to incinerator proposals. Citizen activists have researched alternatives and forced rational long-term solutions onto the regulatory agenda.³⁷ These strategies include:

- Minimizing the amount of waste, by reviving reusable products such as refillable bottles and cloth nappies.
- Persuading industry to invest in clean production, by demonstrating that where there is waste, there is inefficiency.
- Demanding regulations to eliminate toxic substances in consumer goods.
- Starting up "Reuse and Repair Centres", often as a focus for community development.³⁸
- Initiating recycling programmes for materials such as paper, glass, metals, brick, porcelain, ceramics and some plastics.
- Expanding composting programmes to include garden, community and centralized facilities.³⁹ Early separation of organic material from other unwanted material is essential to ensure non-contaminated compost. Ideally, larger facilities should be located on farms where clean organic waste can be composted with agricultural waste.
- Community Household Toxics Exchange Centres. About one to two per cent of the domestic waste stream is toxic — for example, paints, varnishes and cleaners. These can be accumulated into useful quantities, exchanged or used for a secondary purpose.

The adoption of such strategies has already achieved close to a 40 per cent diversion rate of the domestic waste stream in some regions of the US, and many countries in Europe have a goal of 60 per cent diversion or more. A number of studies indicate that it is now possible, using a combination of reduction, reuse, recycling and composting, to divert more material from a landfill than can be achieved by incineration, and at a lower cost.⁴⁰

However, the question still remains of what to do with the residue, which will consist primarily of disposable plastic items, packaging containing more than one material, and contaminated organic items such as disposable nappies. The re-

sponse of the incinerator industry is to call for "integrated waste management," in other words: "recycle what you can and we will burn the rest." While the rhetoric of marrying incineration with recycling is beguiling, it has proved impossible in practice to maximize waste reduction and materials recovery with a technology which demands to be fed by enormous quantities of waste. Experience in city after city indicates that once an incinerator is incorporated into a waste plan, it drives all other decisions.

Moreover, integrated waste incineration still leaves a residue of toxic ash. Whether unrecyclable waste is incinerated or not, there will always be something left to dispose of. Experts are now suggesting that the answer is to bury these residues in a landfill equipped with a plastic liner to prevent leaching, and



"Don't burn waste, avoid it!" is the message of protestors against an incineration plant in Basel, Switzerland.

with facilities to monitor, collect and treat the leachate before it can enter the groundwater.

However, liners for landfills eventually leak. According to the US Environmental Protection Agency, they may last 10 or 20 years, but not forever.⁴¹ Far-sighted citizens, especially those expected to host these experiments, are demanding that waste is screened for toxic and bio-degradable material before it enters the landfill, rather than being recuperated and treated afterwards. Toxics will either have to be stored above ground or returned to the manufacturer, while the organic content will have to go through a further composting (or anaerobic digestion) process so that it does not produce large quantities of methane or leachate in the landfill.

The expense of this screening operation will force authorities to look more carefully at the root of the problem and consider long-term changes in production. Manufacturers will have to be told: if we can't reuse, recycle or compost it, then you should not be making it. At this point, the focus will shift from concern about waste to concern about resources. When this happens, we will finally have arrived at the right question: how can we design safe products for a finite world?

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COMMUNITIES AGAINST TOXICS (CATS)

CATS is a national network of community campaigns established to assist the sharing of experiences and knowledge of communities opposing a variety of pollution problems. Our members are fighting such toxic problems as incineration, toxic landfill sites, the import and export of toxic chemicals and wastes, and general industrial pollution of the atmosphere, rivers and seas.

Incineration is being hailed as the answer to the disposal of the thousands of tonnes of poisonous waste generated each year by the inefficient industries of the Western world. Areas of high unemployment, deprivation and poverty in Britain are being chosen as the sites for this latest wave of so-called "state-of-the-art" incinerators.

As well as highlighting the inefficiency of the regulatory bodies in the protection of the community and the environment from industrial pollution, CATS has supplied technical information, speakers and organisational skills to community groups that have defeated incinerator proposals in Doncaster, Londonderry, Manchester, Wirral, East Kilbride, Howden (Tyne & Wear) and Portrack (Teesside).

For more information about CATS, contact: Ralph Ryder, Co-ordinator, 31 Station Road, Little Sutton, South Wirral L66 1NU, UK. Tel: 051-339 5473



Hulton Deutsch

The Rise and Fall of *Taungya* Forestry

Social Forestry in Defence of the Empire

by

Raymond L. Bryant

The taungya system of agroforestry developed by the British in the teak forests of Burma has been extolled by some foresters as a model for a modern sustainable forestry system which is compatible with shifting agriculture. However, taungya forestry was not the result of premeditated "scientific" design, but the outcome of an antagonistic relationship between an acquisitive colonial power and a threatened indigenous people whose reactions varied from covert resistance to defensive compliance. Applications of taungya forestry within present-day social contexts are likely to manifest the same tensions.

A central thread running through the history of forestry has been the conflict between people who live from forests and those who extract timber for sale. Historically, the conflict has generally been "resolved" by placing the forests off-limits to local people, frequently creating major social unrest in the process. More recently, however, policy makers have sought to defuse opposition through social forestry programmes that involve local people in forestry operations nominally directed to serving local needs.

In seeking viable models for such programmes, foresters frequently cite the success of the *taungya* system of agro-silviculture practised by the British in Burma from the mid-19th century until the end of the colonial period. Often portrayed as a designed system of "scientific management", *taungya* forestry in fact owed its evolution to the reactions and counter-reactions of two principal protagonists: the British government's forestry service and the people who inhabited the forests. The uneasy compromise

that eventually emerged was a system under which limited numbers of shifting cultivators were allocated land designated for tree replanting and allowed to grow their own crops between rows of young trees in return for contributing labour to the planting and maintenance of the seedlings. When the tree plantation was established after one or two years, the croppers were obliged to move on. For the colonial administration, the system provided cheap labour and a means of controlling an otherwise antagonistic population: for the local people, it offered a means of protecting something of their lifestyle. The apparent success of the system over a number of decades lay less in its scientific structure than in the opportunities it afforded for accommodating two conflicting interests.

Imperial Forest Management

The British captured the southern Burmese province of Tenasserim in 1826, in the first of a series of wars during the 19th

century that wrested control of successive tracts of forest land from the Burmese monarchy. The colonialists' main interest in Burma was to obtain teak, in particular for ship-building (primarily in Britain) and railway sleepers. Initially, the colonial administration adopted a *laissez-faire* attitude towards logging which sanctioned unfettered teak extraction by private traders restricted to short-term leases — a policy which guaranteed cut-and-run logging practices. It soon became apparent that supply could not be sustained in this manner; but when rules were introduced — such as those in 1841 requiring licence holders to plant five trees for every one extracted — they were ignored. Reporting on the degraded condition of Tenasserim's forests in 1851, Dr H. Falconer noted that although licence holders were "fully aware of the impending exhaustion of their grants", they had made no substantive effort to plant a new

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tree crop.¹ Another report by leading surgeons of the East India Company warned that unregulated extraction in India (and elsewhere) was leading to severe social and environmental problems.²

Following the annexation of the teak forests of Pegu province in 1852 after the second Anglo-Burmese war, calls for government intervention assumed a new urgency. The British-Indian Empire had become an established fact; and, as the idea of empire took hold, attention turned to its systematic development. At the behest of the Marquis of Dalhousie (the Governor General of India in the early 1850s), a modern system of forest management was introduced under the direction of the German botanist-turned-forester, Dietrich Brandis.³ Unlike many of his predecessors, Dalhousie saw the utility of state forest control, and it was in Pegu that an organized system of imperial forest management was first developed.

“Bread from the Child’s Mouth”

Scientific forest management in colonial Burma was based upon reserved forests in which state rights were pre-eminent and where imperial foresters sought to eliminate all natural and human hazards to teak. In Brandis’s words, “the reproduction of the Teak cannot be satisfactory unless Reserved Forests are established, to be converted gradually into more or less compact Teak Forests, which can be guarded more effectually than is possible at present against fires, creepers, and other injury.”⁴

As the state forestry department assumed this responsibility, it found itself obliged to deal with Burmese peasants and shifting cultivators who lived in or near the teak forests. Dependent upon these forests for many different products, these indigenous groups bitterly resisted the imposition of increasingly rigorous access restrictions. But the restriction of popular access to the forests was an integral part of the commercial exploitation of the teak tree. The introduction of scientific forest management in colonial Burma was thus inherently political insofar as the elaboration of state forest control prompted a pervasive and, at times, desperate Burmese response.

The clash between the colonial state and the indigenous people was particularly striking in the case of the Karen, an ethnic group prominent in southern

Burma, who practised shifting cultivation in the Pegu and Tenasserim hills. What concerned colonial observers was the Karen’s complete disregard for the teak tree. Although living amidst one of the world’s richest teak tracts, the hill Karen made little use of the wood, building their homes entirely of bamboo; even their occupations were “altogether unconnected with an article which is the source of wealth and industry everywhere, but in the place where it is produced”.⁵ The durability of teak was of little use to these itinerant people. On the other hand, clearings to grow their crops and access to forest products such as game and forest plants were essential to their lifestyle.



The activities of the Karen were seen as a threat to continuing supplies of teak. In 1838, for example, Dr J.W. Helfer, adviser to the government on forest matters, claimed that “extensive tracts” of forest were annually being “utterly destroyed” by these cultivators to plant their crops.⁶ “They prefer spots where young Teak abounds to any other, the soil being generally richer and well elevated.”⁷ There were others, however, such as local commissioner H.M. Durand, who believed that the Karen could be weaned off these

habits and that British rule would make them “the best conservators of forests which the British Government could employ”.⁸

Criticism of shifting cultivators thus became tempered by attempts to establish patterns of cooperation with them. Brandis, in particular, was convinced that shifting cultivation might be turned to advantage.⁹ In 1856, he encouraged cultivators to sow teak with their rice and cotton crops after noting the beneficial effect of the clearings or *taungyas* on young teak in the Prome district of Pegu.¹⁰ After the experiment succeeded, the department tried to introduce this *taungya* forestry system in the teak-bearing Pegu Yoma, a low range of hills running from north to south that separate the Irrawaddy and Sittang valleys.

Many Karen, however, feared that the department’s reforestation schemes would convert their traditionally cultivated areas into state forests from which they would be excluded. As one British official remarked in 1863-64, Karen headmen that he had approached “openly admit that they look upon the sowing of teak in their [*taungyas*] as taking the bread from the child’s mouth. All that they urge to prove this is true enough. Everyone is aware of the fact of their returning to the same localities to cut [*taungyas*] after a lapse of from 10 to 15 years”.¹¹ A plantation of teak, on the other hand, might take 150 years to reach commercial maturity.

The elevation of teak to the status of a valuable commodity, and eventually to that of protected species, was a provocative threat to the Karen way of life. The Karen may also have feared that involvement with the British would increase their vulnerability. The British were still newcomers to Pegu and there were no guarantees that they would stay; if Burman monarchical rule were to be reimposed at a later date, there might be recriminations against those who had collaborated with the British.

The colonial government therefore felt it necessary to apply a measure of coercion. The annual taxes which the Karen had previously paid to Burman governors (*myo-wun*)¹², perpetuated by the British in the form of a poll-tax and *taungya* taxes, were collected with greater efficiency. Penalties were introduced for breach of the forest rules. Under laws introduced in 1856, cultivators guilty of teak destruction could be fined or imprisoned. As teak was scattered throughout those areas in which fields were cleared,

forest officials could safely assume that wherever *taungyas* were located, so too would be evidence of teak destruction. Denied a right to the soil, shifting cultivators discovered that they were no longer as safe from the exactions of the state as they had been under monarchical rule.

Hill Karen resistance to these exactions took many forms. Some of those living close to monarchical Burma or Siam crossed the border. In the mid-1860s, for example, Karen moved to the Siamese side of the Thaungyin river to avoid restrictions on their lifestyle.¹³ Groups that did not flee resisted in other ways: "Cases have occurred where through fear of punishment for breaches of rules, a whole village has gone off and cleared every teak seedling on a neighbouring Toungyah when they heard a Forest Officer was approaching."¹⁴

Cultivators refused to cooperate in the investigation of such cases. In the Prome district of Pegu in 1869-70, out of 76 cases involving teak destruction, 67 could not be prosecuted for want of evidence, and only six cases resulted in convictions.¹⁵ *Taungya*-related offences became the most commonly reported breach of the forest rules. In many areas, cultivators simply pleaded ignorance of the rules, initially a quite successful tactic as it played on the forest department's reluctance to alienate the hill Karen unnecessarily.

Igniting Resistance

There was a widespread belief among foresters throughout most of the 19th century that fire was a major hazard to teak and that if measures were not taken, many teak tracts would be superseded by evergreen or bamboo forest. In particular, blame fell upon fires started by shifting cultivators and peasants to clear their patches. The forest department therefore imposed heavy restrictions and obligations on local forest users: reserves could not be entered at certain times or only by designated routes, fires were strictly controlled, and villagers were to help fight fires and report offenders. Under the Burma Forest Act of 1881, the use of fire in reserves was strictly prohibited (unless explicitly sanctioned) and offenders were liable to receive a stiff fine, six months in prison or both. In the dry season, additional restrictions were imposed: hunting was banned, and the use of fire within two miles of reserves was curtailed. The most unpopular rule was that which forced all



A Burmese logging camp in the 1930s. The massive logs, which needed 12 buffalo to shift them by land, were floated down the rivers. Moving them was a considerable engineering feat and required large amounts of labour, which the taungya forestry system helped to provide.

those who exercised any right in reserves, or who received emoluments from the government, to participate in the fighting of fires and the apprehension of offenders.

The forestry department's exaggerated concern about the dangers of fire helped to make incendiarism a popular form of resistance to the appropriation of the forests by the state. Often this simply meant business as usual: hunters continued to fire reserves in search of game, shifting cultivators failed to lay fire-breaks around their clearings, and villagers fired grazing tracts to provide food for their cattle in prohibited areas. But there were also many cases of dedicated arson where villagers deliberately set fire to the forest to destroy government property. In one Upper Burma village, for example, "the rules relating to protection from fire were read over and explained to villagers at the forest settlement, but two days after the rules had been explained to one village, a fire was started by one of these villagers within half a mile of the Divisional officer's camp".¹⁶

It was often difficult to determine whether a fire was deliberate, accidental or natural. If apprehended, forest users routinely denied any responsibility, attributing the fires to natural causes. As one frustrated official observed in 1891, the offer of an award to informers was useless, because "in no case was such information given in spite of the numer-

ous incendiary or mysterious fires which occurred".¹⁷ In another instance, an entire reserve was burnt, but an arrest could not be made as information was unattainable.¹⁸ Imperial foresters also complained of villager indolence and negligence when called upon to perform fire-fighting duties. The case of Kyaungthaik village in Minbu division is perhaps typical. Called upon at noon to assist with a fire, the villagers did not arrive until evening, and even then "only remained a short time, going away before the fire was put out".¹⁹ In Tharrawaddy division, repeated warnings given to suspect villages near the Minhla reserve only led to an increase in incendiary attacks; but when the forest official urged a collective fine, he was overruled by the Deputy Commissioner who warned against any "impolitic move" in the matter.²⁰

During the third Anglo-Burmese war (1885-86) these attacks intensified. In both the Prome and Tharrawaddy divisions, key reserves were overrun by insurgents and became their headquarters, while government bungalows were burnt.²¹ In Prome division, 78 per cent of the area which colonial foresters had attempted to protect from fires was burnt through, and in Tharrawaddy division, 67 per cent of the 44,688 acres similarly "protected" was set ablaze.²²

The fire-prevention policies that fuelled this widespread incendiarism continued until the early years of the 20th

century, when fire protection came to be viewed as not only a waste of funds, but also a threat to the teak forests.²³ A growing number of officials became convinced that fire actually helped teak survive. Fire-protected plantations were subject to an alarming incidence of pests and diseases, while in areas where competing vegetation had been burnt, the young teak seemed to thrive. In 1896, the forester H. Slade argued that fire was "one of the forest officer's most useful agents as long as it is his servant and not his master".²⁴ This view became generally accepted and after the end of the First World War, the fire protection programme was restricted to young plantations only. Insofar as the use of fire was a means of resistance, it therefore lost its appeal, and in late colonial Burma, fire-related offences became less significant.

Gaining Allegiance

In the late 1860s, forestry officials began to recognize that coercion was an unsatisfactory basis for the system, and attempted to draw the Karen into the system as participants. The forest department developed a comprehensive package of benefits as an incentive for voluntary participation. In an agreement first reached with a Karen village in 1869, villagers agreed to plant teak in their *taungyas* in return for exemption from the poll-tax, payment of 10 rupees per planted acre, and, most importantly, land designated for their own use.²⁵ The provision of these "Karen areas" secured the cooperation of a growing number of cultivators. By 1873, eight villages were employed by the Forestry Department, and the planted area rapidly expanded thereafter.

These *taungya* plantations, which in 1874-75 cost 12 rupees per acre, were so much cheaper than cultivation using indentured labour at 21 rupees per acre²⁶ that by 1880 the government of India was recommending the wholesale extension of the *taungya* forestry system.²⁷ Amenable cultivators were also available for other tasks, such as girdling (ring-barking) trees and fire protection.

Forest officials were often assisted by some of the hill Karen as fire fighters. Although they themselves could be a source of conflagration, these shifting

cultivators were nevertheless adept in the art of fire prevention and control. When their help was forthcoming, fire protection was often quite successful and cost-effective. Despite the personal risk, Karen helped contain the damage in a number of reserves set alight by Burmese insurgents against colonial rule. In retaliation, they were attacked: *taungya* plantations which they were tending were fired, and at least one headman was shot.²⁸

In this context, the promotion of *taungya* forestry can be seen as an effort to secure the allegiance of Burma's ethnic minorities, particularly the Karen. The



Teak trees were killed by girdling (ring-barking) and left to stand until they were dry enough to float in the rivers.

antipathy of many of the Karen in southern Burma toward the numerically more populous Burmans facilitated a British policy of "divide and rule". By incorporating the Karen into an organized system of forest conservancy, *taungya* forestry transformed them "from an antagonistic nuisance to forest conservancy into the most loyal servants of the Department".²⁹ Karen went on to play a significant role in the colonial administration. They were particularly prominent in forestry, serving as elephant managers (*mahouts*) in Tenasserim's Moulmein teak industry, and joining the forest department. Indeed, in Tenasserim province, they formed the backbone of the subordinate establishment.³⁰

Taungya forestry thus formed part of a broader campaign to secure control of Burma's forests, and was of considerable significance for the British in a far from stable situation. With the annexation of Pegu in 1852, Britain assumed control of a Burmese people whose allegiance was suspect.³¹ Burma, truncated but still independent after its second British defeat, was in a state of turmoil, and while the threat of a Burmese invasion was remote, the border area was subject to unrest.³² To forest officials, such uncertainty was particularly troubling as most of Pegu's valuable forests were near the frontier; indeed, the border bisected the teak-bearing Pegu Yoma hills. In this respect, *taungya* forestry was as much a security strategy as a forestry strategy.

The Decline of *Taungya* Forestry

In the 20th century, the forest department exerted even greater control over the hill Karen. Forest officials introduced a system of forest villages for cultivators doing planting and other forest work. Under the Burma Village Amendment Act (1921), they were granted extensive powers over these villagers.³³

But, as had been the case with the issue of fire protection, official policy made an about-turn. Foreshadowing future concerns, a growing number of forest officials began to question the merits of plantation forestry.³⁴ As the costs of weeding and thinning increased, concern developed over the susceptibility of plantation teak to disease and insect predation.³⁵ Moreover, after the annexation of the extensive Upper Burma teak forests in 1886, the need for a system of intensive teak regeneration became less urgent, and attention turned to methods of natural regeneration. It was the onset of the Depression, however, and the need for financial retrenchment, that ultimately sealed the fate of the *taungya* forestry system, and in 1935, the government of Burma ordered its gradual termination.³⁶

From the perspective of the hill Karen, the decline of *taungya* forestry was a mixed blessing. On the one hand, it heightened the financial insecurity of those cultivators who had become increasingly dependent on the forest department. For

many hill Karen, *taungya* forestry had become a way of life. Just as the colonial state had undermined their relatively autonomous lifestyle in the 1860s, it now disrupted their new-found dependency. Not for the last time, Karen who had placed their trust in the British felt betrayed.³⁷

On the other hand, the end of *taungya* forestry may have been a reprieve for those of the hill Karen who were determined to hold onto a vanishing way of life. Throughout the last years of the 19th century, as available land was reserved or planted up and new restrictions on forest clearance were imposed, cultivators had continued to come into conflict with forest officials. In 1890, India's Revenue and Agriculture Secretary, E.C. Buck, remarked that "the *taungya*-cutting population are

ready to take advantage of any opportunity to resume their old nomadic habits".³⁸

This comment would still have been appropriate in 1942 as British rule neared its end. In many respects, it summarized the central purpose of the many hill Karen who refused to settle in the plains and resisted all colonial attempts to make them do so. For the colonial state, *taungya* forestry was a means of weaning shifting cultivators off their "destructive" lifestyle; to many hill Karen, it was a source of income that helped them defend certain aspects of their lifestyle against the demands of an increasingly powerful state.

Patterns of Control

Many of the colonial patterns of forest control and resistance continue in Burma today. The Burmese foresters who took charge of the forest department following British withdrawal in 1948 were trained by the British and openly (and proudly) upheld the management tradition and practices introduced under British rule. Even today, Burmese officials speak of Dietrich Brandis as the "Einstein" of Burmese forestry.³⁹

In 1962, when General Ne Win came to power, the forestry department inherited from the British was taken over by the military and run by officers with no experience of forestry. The timber industry became an important factor in what



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Present day Karen woman and man from a village in territory held by Karen rebels. The villagers live by shifting cultivation. A few years ago, their communal forest was felled by Thai loggers.

has developed into a full-scale war waged by the military government against the Karen and other minorities. While the colonial ideals of sustainable forestry have largely been abandoned in the drive to amass foreign currency quickly, the colonial management system's reliance upon strict state forest control has accommodated the military regime. Forestry management has been a significant factor in the effort to reassert the central role of the state over a growing proportion of the national territory. The area of forest reservation climbed by 5,000 square miles to a total of 39,487 square miles during the period 1961-1992⁴⁰ — yet Burma's rate of deforestation is now reckoned to be among the highest in the world.

The continuing struggle between the state and indigenous people for control of the forest can now be seen in a somewhat different form along the Thai-Burmese border, where insurgent Karen, who subsidize their resistance movement by selling timber to Thailand, are fighting with the military government for control over the border forest.⁴¹ It is also visible in projects such as the recent Kinda Dam watershed management project, funded by the United Nations Development Programme, which aims to "stabilize shifting cultivators through incentives, demonstration and technical assistance" in order to restore local ecological equilibrium.⁴² The patterns of control and resistance elaborated during the colonial era

are echoed in the contemporary context.

The legacy of the colonial system can also be witnessed in other tropical countries where *taungya* forestry is upheld as a sound agroforestry system. In the teak forests of Java, where it was introduced in 1873 by W. Buurman, it is still employed in reforestation projects under the name *tumpang sari*. Its practice is beset by much the same conflicts that hounded *taungya* forestry in Burma. Desperately poor villagers, denied access to the forests that have become teak reservations or plantations for state profit, resort to whatever forms of resistance they find propitious. Seedlings are discreetly sabotaged, since if they do not grow, the peasant's tenure on the *tumpang sari* may be extended. Fires are started

in plantations and "when the *mandor* (forester) asks for help, people purposely go slow so the fire doesn't go out".⁴³ And, like some modern-day Karen (though in different circumstances), some Javanese forest dwellers have cashed in on the market for teak: the level of "counter appropriation" or "poaching" of teak from state forests has reached epidemic proportions, and in the face of popular complicity, the forestry department is often powerless.⁴⁴

The environmentally-concerned forester, faced with such resistance, may elicit some sympathy. There are, after all, grounds for considering *taungya* forestry to be sound ecological practice — an elegant adaptation of shifting cultivation to modern forestry techniques, which for a brief moment during the passage of an empire actually seemed to work. But however environmentally-sound *taungya* forestry may be in theory, its role is subsidiary to the social context in which it is practised. At the heart of contemporary forestry practices — whether in Burma, Indonesia or Africa — is the extraction of high-value commercial timber destined for national and international markets. In their reservations, forest departments continue to favour the long-term development of commercial timbers over forest products and functions that are of greater use value to local people. This policy, now as in the 19th century, remains an invitation to popular sabotage.



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Still Pictures/Argus

Chemical plant in former East Germany.

Going West

Market Reform and the Environment in Eastern Europe: The First Three Years

by

Roger Manser

After the “quiet revolutions” of 1989, many East European policy-makers were led to assume that environmental problems would evaporate in the shift to a free market economy. Over the next three years, there were indeed improvements in environmental quality, but many of these are attributable to a decline in output rather than to a refinement of production methods.

Some polluting industries proved to be competitive on the international market and this, together with a rise in the consumption of imported manufactured goods, threatens to cause more problems in the future.

Opposition to rising environmental degradation was one of the main factors in the overthrow of communist regimes throughout Eastern Europe. In Poland in early 1989, there were environmental round table discussions between Solidarity and the communist government. Bulgaria's “quiet revolution” was spearheaded by Ecoglasnost. In East Germany during the late 1980s, there was a growing number of environmental citizens' groups, often linked with the church, calling upon the government to give priority to ecology over the economy.

Such an order of priorities, however, was not readily adopted by governments, and when the new generation of liberal politicians came to power around 1990, they preferred to view environmental policy as subordinate to economic policy. The wealthy capitalist countries were seen to have made great strides in clean technologies over the preceding 30 years, while

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the socialist countries remained wasteful of resources, heavily polluted and ridden with leaky nuclear power stations.

It was, therefore, tempting to conclude that a shift from a centrally-planned to a free market economy would automatically bring environmental benefits. Poland's Minister of Environment, Bronislaw Kaminski, said, “The process of reversing [the] neglect of environmental protection in Western countries continued for many decades and has been crowned with success thanks to radical reform of the economic structure and investment in clean production technology. This same mode of thinking guides our intentions.”¹

The benefits of such reforms were articulated more confidently by the organization that has emerged as the largest funder by far in the region, the World Bank: “An important by-product of economic transformation will be large reductions in the amount of environmental damage associated with excessive energy use and with some forms of heavy industrial production”. The Bank talked more generally of an “environmental free ride”² and of environmental benefits “at no net financial

cost to governments";³ though it did concede that in Eastern Europe, liberalization would have to be supplemented by public investments and regulatory policies "to address the failure of markets."⁴

Over the first three years of market reforms, some forms of environmental pollution in Central and Eastern Europe indeed declined markedly. The level of toxic emissions in the region is estimated to have fallen between a fifth and a quarter from 1989 to 1991, and a further substantial drop was expected for 1992. However, it would be rash to attribute this improvement to the rapid introduction of leaner and cleaner technologies or to the guiding hand of market forces. The main factor was the steep economic recession which has affected the whole region. Moreover, during this period, the four main planks of free-market policy — privatization, abolition of energy subsidies, hard budget constraints and investment for restructuring — played both a positive and a negative role in a complex process whose outcome is as yet far from certain.

Privatization

The prospect of privatization certainly spurred some of the monolithic state industries to clean up their production methods. "Western capital will not want to talk with us," said Andrzej Lipko, Poland's industry minister, "unless enterprises present credible [environmental] recovery programmes."⁵ Managers at the modern state-owned Gdansk oil refinery reduced their sulphur dioxide emissions by one-third to 8,000 tonnes a year between 1988 and 1991,⁶ as they wanted potential buyers of the plant to know they were familiar with Western standards and practices.

On the other hand, there was considerable unwillingness on the part of prospective buyers to accept financial responsibility for decontaminating the site, while the state owners could often not afford to do so. In 1991, the Dutch multinational Philips demanded a full environmental indemnity as a condition of its purchase of light bulb manufacturer Polam Pila. It eventually agreed to cover the relatively light cost of cleaning up the site — \$5 million — in return for an extra 15 per cent stake in the company. In other cases, investors simply leased the site from the state or bought the clean modern part, leaving the dirty part in the hands of the state. In the case of one Polish galvanizing plant, the polluting state-owned part was contracted to supply components to the clean, privately-owned part whose Western owner was responsible for the payment neither of emission charges nor any fines.⁷ The competition between foundering businesses to attract foreign investors enabled prospective buyers to choose which parts of factories they wanted, potentially leaving the state treasury or municipality with "nothing but clean-up obligations."⁸

Market Prices

Besides privatization, one of the first reforms tackled by the new governments in Eastern Europe was the reduction of subsidies for energy and raw materials, as this was perceived as being relatively straightforward. The main impact was expected to be on air pollution: the World Bank estimated that "energy subsidies in the late 1980s cost the governments of the USSR and East and Central Europe some \$180 billion a year. More than half the region's air pollution was "attributable to

these distortions."⁹ Price increases "provide incentives for energy conservation in all sectors of the economy, leading to substantial reductions in emissions of pollutants", said the World Bank's Eugenio Lari. "We have calculated that energy price reform could bring down particulate levels in air by almost 40 per cent in the next three to five years [and] almost 80 per cent by the end of the century."¹⁰ This advice was followed. For example, between the beginning of 1990 and late 1992, Polish lignite prices went up by about 400 per cent. The costs of electricity supplied to industry went up by nearly 800 per cent.

But, in practice, the picture was significantly more complex than the World Bank models suggested. A tenth of electrical energy, a sixth of hard coal, a quarter of natural gas and a third of steam and hot water consumed in Poland were estimated to have been used by households, whose consumption is relatively inelastic. As most households were not able to switch off or regulate their supplies, or change their suppliers, higher prices were equivalent to a tax on energy use. The 400 per cent hike in the costs of Polish lignite prices did not prevent an increase in energy consumption by households.¹¹

In the industrial sector, there was a decline in energy consumption, but in Poland, Czechoslovakia and Hungary, this was less than the drop in industrial output, which meant that their use of energy had in fact become less efficient.¹² In Bulgaria, the Varna thermal power station could only afford to operate at 40 per cent capacity, because of the high price of imported coal. As a result, two-thirds of the dependent heavy industry could run at only half capacity. On the one hand, this led to decreased pollution from industry and from energy generation, but on the other hand, it meant that Kozloduy nuclear power station, one of the most dangerous in the region, could not be closed.¹³

Budget Constraints

The withdrawal of government subsidies and other budgetary supports was expected to close old polluting operations. In fact, though thousands of plants have been forced into bankruptcy, few of these were large polluters. There were two main reasons: either, ironically, these plants were so old that they no longer had to cover the costs of depreciation and hence were more resilient; or else they were major employers and were kept in operation for social reasons.

In the East European metals industry, for instance, while several non-ferrous plants closed or switched to processing scrap, over 30 smelters kept operating as before. Of these, over a dozen were listed as major regional sources of air pollution.¹⁴ Most of the copper, lead or zinc units emitted sulphur dioxide or heavy metals, while the aluminium smelters, besides being heavy energy users, emitted fluorine. In addition, many were major sources of solid waste. On the ferrous side, the situation was similar: only a few of the region's 100 iron and steel works closed down. If hard budget constraints had been ruthlessly applied, market forces would have probably shut down some two-thirds to three-quarters of them.

In many respects, the problems faced by the East European steel industry have been little different from those in the European Community, where the closure of inefficient steel works has shattered dependent communities. Given a limited choice, local people will often accept environmental degradation in order to prevent social disintegration. "Two-thirds of the

Undermining the Czech Republic

Over half the electricity in the Czech Republic is generated from high sulphur "brown coal" mined in northern Bohemia from both open-cast and underground pits. The priority accorded the industry by the communist regime resulted in a policy of "liquidating" towns and villages situated above the deposits. So far, 112 communities have been destroyed. Since 1989, policy has changed to one of virtual *laissez-faire*, where controls are viewed as a hindrance to competing with the West on the open market.

The recently denationalized Hlubina State Mining Enterprise exports half its coal to Germany and is keen to continue its cheap but outdated production methods. Environmentalists and local people are now rallying to save the historic town of Libkovice, which Hlubina began to demolish 18 months ago. Eleven people, including the ex-mayor, are still determinedly living there, without electricity or running water, while the town is bulldozed around them. In December 1993, the Czech Public Prosecutor temporarily halted



the destruction of the town on a legal technicality, but work could start again at any time.

There are other parties interested in the brown coal besides Hlubina. In 1992, a US consortium led by Atlantic Partners, and apparently involving consultants from Waste Management International, tried to buy and demolish the village of Chabarovice, also in northern Bohemia. In its place, they proposed a new village nearby, a "model non-polluting brown coal mine", and a processing plant to produce clean-burning briquettes from the estimated 100 million tonnes of brown coal under the village. The consortium also offered to clean up a nearby toxic dump. The 400 villagers rejected the offer.

Libkovice has highlighted the need to find socially acceptable solutions to a destructive energy policy. By encouraging energy export, the Czech government is perpetuating the laying waste of an entire region and polluting the country's air.

Rod Harbinson

population living in areas that have experienced severe environmental degradation are against the closure of polluting plants or directing investment toward clean-up," claimed one official Polish report, adding laconically that people "prefer being poisoned slowly to losing their jobs and thus experiencing an immediate reduction in their income."¹⁵

Investment for Modernization

While budget constraints closed fewer plants than expected, a corresponding lack of investment failed either to generate fundamental improvements in existing units or to replace them with new industrial activities. Other than in Eastern Germany, the funds from governments, aid agencies, domestic and foreign investors and the enterprises themselves were quite insufficient to underwrite the environmental changes needed. For instance, to bring the region's 20-30 or so potentially viable steel mills up to accepted standards could require at least \$25 billion.¹⁶ This investment has not been forthcoming so the plants were neither revamped nor closed.

The scarcity of investors forced concerned politicians to abandon optimistic plans to tackle pollution problems at their source. In 1991, Tomasz Zylicz of the Polish Ministry of Environment said: "It will be the role of our policy instruments to ensure that the growing [environmental] expenditures are cost-effective and favour process-integrated changes, while keeping end-of-pipe solutions to the necessary minimum."¹⁷ Yet in the same year, at an environmental conference in the US, Promasz, a Warsaw-based consulting firm, catalogued 100 industrial and municipal projects needing foreign investment to reduce environmental damage. Most of the proposals were for end-of-pipe solutions only.¹⁸ Even though the investment costs were limited (typically \$5 million to \$50 million per project),

only one or two of the projects had found favour with foreign investors after 12 months, according to the Ministry of Environment.¹⁹ A fuller report outlining a wide range of business opportunities for Western firms in the environmental arena, published a year later, met the same response.²⁰

The level of environmental funding from aid organizations and development banks was also lower than anticipated. By the end of 1992, about \$1.5 billion had been committed — the cost of building about two miles of the Channel Tunnel — and actual disbursements probably totalled \$250 million. In some cases, this aid seemed primarily designed to facilitate the entry of Western companies into the East European economy: USAID, for example, funded a number of research projects, the results of which were made available to US-based firms looking to invest in Poland. And there was an identifiable tendency for funders to avoid projects which would enable the region to compete with or leapfrog the West. For example, only a small proportion of aid went on restructuring heavy industry, which could then have competed with hard-pressed EC firms. Clean technologies were also bypassed. Out of the \$250 million in bilateral aid from the EC up to mid-1992, only five of the 140 or so projects involved, with a total value of \$1.6 million, were for supporting renewable energy or clean or cleaner technology. All five were funded by Denmark.

Recession

While the above strategies have had some effect in certain situations, they do not account for the considerable drop in emissions that Eastern Europe has experienced. In fact, there is little doubt that most of the improvements in environmental quality have been connected not so much with "radical reform of the economic structure" as with the region's lower economic

output. Between 1989 and 1991, total energy consumption in Eastern Europe declined by 20 per cent, while in EC countries it rose about two per cent.²¹ In 1992, the Bulgarian Minister of Environment, Valentin Vasilev, was reported as saying that the main reason for the 30-40 per cent reduction in pollution in his country was "economic decline",²² while the *Financial Times* observed that in Saxony cleaner air came "hand-in-hand with unemployment".²³

In addition, a number of large factories have been forced to close down for environmental reasons. In Poland, in 1992, orders were made for the closure of 26 of the most polluting industrial plants, of which 18 were reported to have shut down, though not necessarily permanently.²⁴ In Eastern Germany, over 50 have been closed, as part of measures which are expected to cut Eastern Germany's emissions of sulphur dioxide by 10 per cent and dust emissions by 13 per cent. According to a federal government report, some 43 per cent of the reduction could be attributed to plant closures, 55 per cent to reduced output and two per cent to "technical environmental protection measures".²⁵

Although statistically it is not easy to separate environmental improvements arising from reduced output from those due to new laws or economic restructuring, there are situations where it has proved possible. Polish researchers specifically identified the recession and the fall in industrial production, and not "pro-ecological measures", as the cause of improvements in the quality of the water of the river Vistula in 1990 and 1991. In terms of both harmful chemicals and bacteria, the proportion of water that was too poor to be classified halved, while the proportion suitable only for industrial use fell by a third. While none of the water was yet fit to drink, the proportion suitable for swimming and recreation increased. The improvement was particularly noticeable in heavy metals, nitrogen compounds, iron and chloride and other dissolved substances.²⁶

Similar reductions were noted in airborne emissions generated by Poland's main air polluters between 1989 and 1991; emissions of dust and gases (sulphur dioxide and nitrous oxide) declined by around two-fifths and one-third respectively. Comparing these emissions with output for specific industries suggests that the decline in economic activity was the principal but not the only factor in curbing air emissions. Between 1989 and 1991, dust emissions from the cement industry fell by 55 per cent, and production by 30 per cent; in the steel industry, they declined by 33 per cent while raw steel production dropped by only 24 per cent. Contributory reasons for lower emissions may have included more efficient operation of filters at lower output levels and closures for commercial reasons.²⁷

If the reduction in pollution in Eastern Europe is attributable to a drop in levels of economic activity, rather than to a shift away from a centrally-planned economy, then there must be doubts about its sustainability. According to a 1991 semi-official government report on eastern Germany: "The detected reductions in pollution of receiving water do not imply a permanent change of the situation, as recent measures taken in the second half of 1991 prove. A lack of thorough technical reconstruction and renovation could mean that the resumption of production will cause a rapid increase of pollutant emissions."²⁸

Comparative Advantage

Eastern Europe's projected rise from economic turmoil is destined to be engineered largely by Western development

banks, domestic investment, and multinational companies. To attract the necessary investment from these, Eastern Europe must offer certain advantages that are competitive on a global market.

The region's most obvious advantage is cheap labour. Wages are considerably lower than in the West, and while they are not always as low as in the Third World, proximity to Western Europe can tip the balance. However, a second potential attraction for Western firms is the possibility of environmental advantages. These include unspoilt landscapes, relatively cheap electricity, weak monitoring of environmental rules and easy waste disposal.

The strategic use of these advantages can be seen, for example, in the case of a Dutch company which imports shrimps into Poland, where they are cleaned and then either frozen or canned before being re-exported. The company chose the north-east of Poland, as unemployment there was high and environmental controls on dumping the process waste in the sea were limited.²⁹

In a similar manner, highly polluting production methods in heavy industry which are supposed to be eliminated by free market competition, may in fact offer a comparative advantage. While steel mills in Hungary and chemical plants in Bulgaria might be inefficient by Western standards, according to the World Bank, they had "a significant comparative advantage" over those in the other countries of Central and Eastern Europe.³⁰ The same was true for the Kosice steel works, one of the main sources of the 400 per cent increase in exports of Czechoslovak steel tubes to Germany in the first half of 1992 and which was high on the list of Slovakia's main polluters.

Such operations are expected to contract less than others in the region, with the result "that the fall in total emissions may be less than might be expected from the decline in total industrial output".³¹ In some cases, the emissions from those plants might even increase.

The Waste Trade

One of the most blatant examples of exploitation of Eastern Europe's lower costs and laxer environmental regulations has been the waste trade. In the late 1980s, as Poland opened up to the West, weak environmental regulation almost made the country into the dustbin of Europe. According to Greenpeace, "complete plants for incinerating waste and 'recycling' used oil were offered free, on condition that the plants accepted imports, and [the] residues from these processes necessarily remained in Poland".³²

In 1989, Poland introduced a total ban on waste imports, but this too created problems. Poland imported sulphite lye, a waste product from the Norwegian pulp and paper industry, to use as an "essential" raw material in its two copper smelters. The ban threatened to reduce copper production by as much as 40 per cent, so the environment minister, Maciej Nowicki, eventually decreed sulphur lye not to be waste. Some 96,000 tonnes were imported in 1990 and 80,000 tonnes in 1991, prolonging the life of the two copper smelters which were listed among the 80 most polluting industries in Poland. Had they been modernized, they would not have needed to use the lye.

The waste import ban also created havoc in the paper industry. In spring 1992, the new environment minister, Stephen Kozłowski, gave permission for 50,000 tonnes of waste paper to be imported, on the grounds that without it, several of

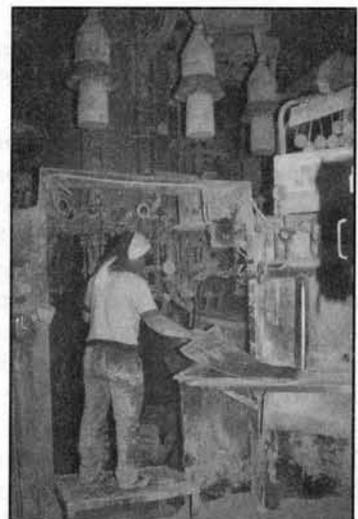
Cinderella Goes To Market

The pressures of privatization, the free market and the introduction of new technology have combined to force high levels of redundancies and unemployment in Eastern Europe. Women have been particularly affected. Under state socialism, women were a substantial part of the labour force, but now constitute 50 to 70 per cent of the total unemployed in many countries. The closure of old industries, particularly the collapse of the textile and clothing industries, and the widespread closure of childcare facilities, combined with a dearth of retraining programmes, have been significant factors.

As new technology makes jobs

cleaner and more highly-skilled, men opt to move into them, leaving women to perform simple and repetitive tasks or the lower-status jobs. At least one set of professions — those in the banking, finance and insurance sectors — which were “feminized” and relatively unimportant in the previous command economies may well become “masculinized” under market conditions, as the enhanced prestige of accountants and bank and insurance clerks leads to higher salaries and displacement of women by men.

Source: Barbara Einhorn, *Cinderella Goes To Market: Citizenship, Gender and Women's Movements in East Central Europe*, Verso 1993.



Jecko Vassilev/Still Pictures

Pleven cement works, Bulgaria

Poland's paper mills would have to close. As other exemptions would have further discredited the 1989 ban on imported waste, a new law was passed by parliament in early 1993 permitting the import of secondary raw materials. The beneficiaries were expected to be not only the paper industry, but also Huta Warszawa, a major processor of steel scrap and the only steel mill in Poland to attract a foreign investor.

The changing laws on imported waste are also related to developments in the domestic waste industry. After the 1989 waste ban was passed, foreign companies began to offer Poland incinerators for domestic municipal waste only. In 1991, the Promasz catalogue listed ten proposals, and by 1993 Greenpeace recorded 30, though not all were expected to go ahead. If a glut of incineration capacity developed, it was expected that there would be pressures further to weaken the import ban, or even to remove it completely.

In this respect, Poland's geographical position is significant. The 1991 German laws on waste and recycling (known as Dual System Deutschland) required that by 1995, German industry collect and recycle 80 per cent of all plastic waste, with similarly high targets for board and paper packaging, glass, tin plate and aluminium. Because of high labour costs and stringent environmental laws within Germany, recycling in Poland would have substantial cost advantages. When the German law was passed, the Polish government received a number of requests from Germany to set up treatment plants for imported cardboard and plastic boxes.

A Western Lifestyle

Eastern Europe's projected recovery involves not only finding new roles for its industries in an expanded Europe, but also new roles for its consumers. Economic reform has whetted consumer appetites for goods and services that are either Western in origin or in style. Over the last four years, while production has dropped in the region, the consumption of imported goods has increased considerably.

The effects of this consumption can be seen in the rising volume of domestic waste. The available figures vary considerably but one Polish press report in late 1991, apparently

quoting a Ministry of Health official, said that the volume of rubbish generated in the country had increased by 40 per cent since 1989 owing to the import of heavily-packaged foreign goods.³³ For the future, investment analyst Credit Suisse First Boston (CSFB) forecast an increase in packaging production in Central and Eastern Europe by 50 per cent over the decade to the year 2000. “As competition is introduced and consumer choice becomes a reality,” it noted, “manufacturers will require more packaging and better packaging to increase the appeal of their products in the market place.”³⁴

The import of Western packaging has also altered Eastern European waste strategies. The reuse and recycling systems of the past, driven by national shortages of raw materials, have become much weaker under the free market. Western techniques of food processing and storage have pushed out some of the more environmentally acceptable materials used in the past. Beer is now more frequently canned, while milk is increasingly packaged in plastic bags and cartons, in contrast to the reusable glass bottles or small milk churns of the past. Tetra Pak, the Swedish company specializing in the manufacture of non-returnable beverage cartons, has set up a factory in Hungary; in Poland, it claims to have secured 80 per cent of the national market for these cartons.³⁵

Escalating sales of consumer durables pose other threats. For example, the rising number of washing machines in rural areas has not been matched by waste water treatment capacity. This state of affairs, combined with the continuing production of detergents containing phosphates by both indigenous enterprises and Western acquisitions, has meant more nutrient-rich sewage flowing into nearby seas, none of which are tidal.

Transport is an even greater problem. In the late 1980s, some three-quarters of freight travelled by rail; in the early 1990s, the pattern began to shift as private businesses sought the increased flexibility offered by private transport. Western car companies have been the largest investors in Eastern Germany, Czechoslovakia, Hungary and Poland, but so far sales of cars produced in these countries have been low. For example, General Motors sold only 2,200 cars in Hungary in 1991.

The increase in car ownership has instead come through imports from the West. In 1991, some 300,000 new and second-hand cars were imported into Poland, while in Eastern

Germany, the number of registered cars increased by nearly one million (about 23 per cent) in the first six months of union. In Hungary in 1992, the number of cars brought into the country increased five-fold to 75,000; some 80 per cent were over four years old.

Nevertheless, Western car manufacturers seem likely to maintain their presence in the region: with car ownership at one-half to one-third of Western levels, they expect a major increase in sales in the medium term. Hard on their heels are the oil companies. In the words of an Esso senior executive, "the density and quality [of the retail petrol networks] are totally inadequate even for today's demand. To use this one-time opportunity to enter a new market and offer to customers the services which they deserve for their good money is a temptation no major oil company can resist."³⁶

The impact is likely to be felt in both the declining use of the region's generally good public transport system and increased environmental degradation, especially in towns. Over the next decade, Polish emissions of nitrogen oxides from vehicles are forecast to rise by 100 per cent and those of carbon monoxide by 70 per cent.³⁷ It remains to be seen whether the introduction of stringent regulations on car testing in Hungary and Czechoslovakia will reverse this trend.

Fascinating Rhythm

The consumer boom has been characterized by Stefan Kozłowski, Poland's Minister of Environment in early 1992, as a "mindless fascination with the Western way of life and economic model" which "may lead to an artificial and unwarranted rise in the consumption of goods that are of little worth and use. Consumption is by nature hostile to the environment and in the long run poses a threat to human civilization as a whole."³⁸

Comparisons between Eastern Europe and the European Community, though politically appealing, have been simplistic. The middle-income countries of Eastern Europe have more in common with newly-industrializing countries such as Turkey, Iran or Mexico. The environmental problems that beset these growing capitalist economies have been conveniently forgotten, as have the less salubrious episodes in the industrialization of the UK, United States and Germany, as epitomized in Lancashire, Ohio and the Ruhr. If the environmental situation in the West has progressed, it has not been through the application of free trade economics, but because dirty basic industries were closed down (often to be relocated abroad) under financial and political pressure — and because wealthy economies can afford cheaper imports from developing countries, where environmental standards are lower.

The Western industrialized economies have been projected as a model for most of the middle-income countries to copy, and Eastern Europe has been no exception. However, it is doubtful whether the Western route to development can be easily followed since it was founded on the worldwide exploitation of natural resources. These resources are no longer available in such quantities and at such low prices; and it is now clear that their use will have a worsening impact upon the environment.

Until the industrialized countries begin to develop their own programme of sustainable restructuring, it is unlikely that those who are now following in their consumerist footsteps will want to do the same. Serious efforts to tackle the local and global

implications of economic over-development are now long overdue. Although the West may have been the winner of the Cold War, if it does not soon begin to change its treatment of the environment, it could become the ultimate loser.

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Books

Pervasive Patriarchy

EARTH FOLLIES: Feminism, Politics and the Environment by Joni Seager, Routledge, New York/Earthscan, London, 1993 \$27.50/£12.95 (pb) 352pp. ISBN 1-85383-166-2.

To read *Earth Follies* is to witness a tenacious feminist geographer at work as she maps the coordinates of male dominance within the worlds of the military, multinational corporations, governments, and the environmental movement of industrial countries. Joni Seager persists in asking questions of agency about environmental pollution and threats to human health, aware that doing so threatens the entrenched male footings of major institutional polluters and their critics, the mainstream environmental organizations.

For example, the Pentagon generates more toxic waste than the five largest US chemical companies together. At this threshold — the transition from reciting the litany of military environmental abuses to naming the agents of destruction — many environmentalists end their analysis. Seager takes it further, however, by saying that the military is an institution invented and peopled mainly by men which perpetuates masculinism by proliferating and parading phallic weapons, by treating nuclear capability as a signifier of national manhood, and by victimizing women in prostitution camps around military bases.

And what of human health and environmental disasters, like the Louisiana "cancer valley" between New Orleans and Baton Rouge, home to 25 per cent of the US chemical industry; or the explo-

sion of the Union Carbide plant in Bhopal, India that killed between 5,000 and 20,000 people and maimed another 200,000? The economic imperative of profit-making is a "necessary but not sufficient explanation," she argues. We must look deeper "into the cultural heart of corporate life". Whose system of values has set profit as the bottom line for corporations? What are the behavioural mechanisms of corporate life that enable corporate men to make products and to design factories that maim and kill people and the environment?

A defensive rebuttal might be that women in the corporate (and military and government) world, for example, behave just the same as men. (Margaret Thatcher is usually dragged out at this point.) But Seager reiterates that these institutional systems express and validate the values of powerful men; that most male participants acquiesce to these systems; that the few women who succeed in reaching the upper levels do so by aping masculinist ways (or simply by taking up the niggardly space reserved for a small number of talented women); that these systems are fundamentally antagonistic towards women, as evidenced in the sexism and sexual harassment reported by the majority of working women.

Seager could have pointed to yet another link in this chain of institutional agents causing environmental destruction — universities. These have legitimized the ideology of environmental economics and corporate environmentalism and depoliticized environmental dispute resolution and mediation by avoiding discussion of power differences. In addition, nearly all major research universities have abandoned the biological study of organisms for the greenback pastures of genetic engineering. This trend will only expand as institutions, such as the Massachusetts Institute of Technology, seek to replenish military research coffers with environmental research funding without any fundamental shift in paradigm.

"Does it matter," asks Seager in an analysis of sexual politics in the Western environmental movement, "that the schism in the environmental movement is increasingly between a mostly [white] male-led professional elite and a mostly female-led grassroots movement? . . . Does it matter that the leadership structure [of the environmental establishment in Europe and North America] replicates the structure of the corporations, militaries and governments that are often their en-

vironmental adversaries?" Other protest movements, such as the civil rights movement in the US and the peace movements in the US and Europe, amplify the resounding "yes" Seager gives in response. The professionalization of protest movements has historically shifted power, priorities and values towards men with their "low voices, no tears" politics. Within the ecology establishment, the process is rapidly changing environmental tactics, organizational ethics and workplace structures, and replacing "women-friendly, non-hierarchical, consensus-seeking" environments. These changes in turn profoundly affect the nature of environmental activism.

Are there examples of environmentalism that express politics, values and methods of organizing not infused with masculinism in which women are agents of social change? The final chapter of *Earth Follies* provides a sweeping canopy of women's grassroots movements from around the world — saving forests in India, planting forests in Kenya, opposing nuclear waste dumping and incinerators in North America, and consumer movements in Western Europe and Japan.

In their statements of aims and objectives, and in their strategic programmes, however, many of these grassroots organizations rarely name male dominance with the forthrightness that Seager calls for. Such radicalism is demonstrated more by the myriad international feminist NGO networks which have developed in the past few years, such as the Feminist International Network of Resistance to Reproductive and Genetic Engineering (FINRRAGE), Health Action International, Development Alternatives with Women for a New Era (DAWN) and the Women's Environment and Development Organization (WEDO). Although some are simultaneously professional and grassroots, they are not bureaucratized in the ways that Seager correctly characterizes the mainstream US environmental organizations. Many use a mixture of intellectual tools and the expertise of women's lived reality. These networks not only indicate the diverse ways of environmental organizing which crosscut the usually separate worlds of grassroots activists, professionals and academics, but are also forthright about sexual politics.

In uncovering the links between male dominance and worldwide environmental destruction, as well as the misogyny of mainstream environmentalism, *Earth*

Follies challenges men to eradicate the roots of the destruction, concluding with a sober challenge to environmentalists:

"For women to act as agents of environmental change, they must be freed from narrow male assumptions about appropriate gender behaviour, and they must be free to act without the threat of male violence . . . The struggle to forge an environmentally just and sound future is inextricable from the struggle for gender justice and equality".

H. Patricia Hynes

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The Future of Agriculture

ECO-AGRICULTURE: Food First Farming, Theory and Practice, by Marthe Kiley-Worthington, Souvenir Press, London, 1993, £16.99 (hb) 276pp. ISBN 0-285-63117-9

FROM THE GROUND UP: Rethinking Industrial Agriculture, by Peter Goering, Helena Norberg-Hodge and John Page, Zed Books, London and New Jersey in association with ISEC, 1993, £10.95/\$17.50 (pb) 118pp. ISBN 1-85649-224-9

A FUTURE FOR THE LAND: Organic Practice from a Global Perspective, edited by Philip Conford, Green Books, Devon, 1992, £14.95/\$14.95 (pb) 256pp. ISBN 1-870098-49-8

Agriculture is back on the agenda. Not since the 1930s and 1940s has so much serious consideration been given to the direction of agricultural developments. The debate about the damage being done by industrialized agriculture; how this can be ameliorated; what sort of farming methods and techniques would be more appropriate; and what policies are necessary to encourage them is taking off with vigour. The role of individuals and communities in achieving change is also becoming a focus for attention.

These three books examine the problems associated with industrial agriculture in different ways: what links them is

a search for positive and far-reaching solutions to the problems that exist. In a sense, all three books are an expression of the need to find a more sustainable way of producing food, and yet rarely is the term "sustainable agriculture" used. Despite the fact that at an international level, and certainly in Britain, sustainability is very much in fashion, these authors tend to stick to the concepts of "ecological agriculture", "organic agriculture" and "permaculture".

To an extent, this reflects the tensions within the agriculture debate, firstly between theory and practice, and secondly between the different strands of the "sustainable agriculture" movement. Debates may rage at the national and international level about what constitutes sustainable practice, but these are largely theoretical and directed towards policy. At the sharp end, people are becoming committed to much more concrete concepts and principles, and often engage in detailed arguments about the shortcomings of a particular set of practices, such as permaculture or organic farming.

This division between theory and practice is brought out in Marthe Kiley-Worthington's book, *Eco-agriculture*. The first few chapters pursue the idea that we need to stop thinking in a short-term and short-sighted way about the economics of farming. This is then used as a theoretical framework for a much more personal discussion of her attempts to put ecological theory into practice, first on a farm in Sussex, then on Mull and finally on Dartmoor.

It is Kiley-Worthington's detailed and personal descriptions of the problems she

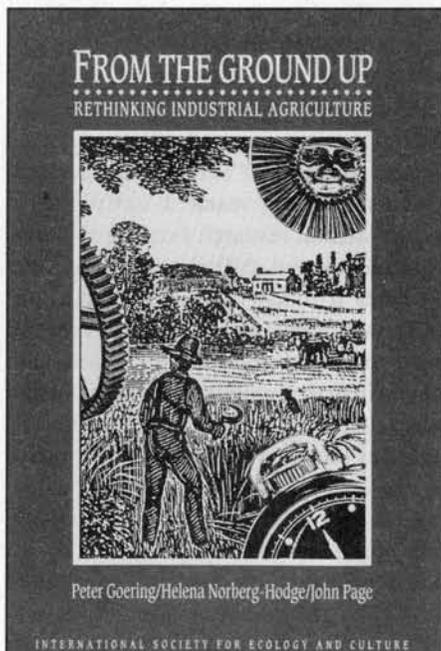
faced and the way she overcame them that provides insight into a farmer's perspective and makes this book so compelling. She herself admits that she is really more interested in animals than people, and the chapters on animal behaviour and human/animal relationships are especially thought-provoking. Kiley-Worthington seems to have the rare combination of skills needed both to "do", and to describe what she is doing, as well as the drive of a researcher to investigate, and the capacity to feed new knowledge back into altered practice.

In contrast, the strength of the book by Peter Goering and his colleagues, *From the Ground Up*, lies much more in its analysis of current problems. For those seeking an overview of existing problems — from excessive use of fertilizers and pesticides through to the use of animals in intensive systems and the loss of family farms — the evidence is here. The impending dangers associated with GATT and biotechnology are also highlighted in an accessible way.

Like Kiley-Worthington's book, *From the Ground Up* moves from the theoretical to the practical, and hence from the negative to the positive. In this instance, however, the focus is placed on what individuals and communities can do to effect change, viewing the situation from the perspective of citizens rather than farmers. There is a strong emphasis on reconnecting non-farmers with production, and rebuilding a sense of community, whether this be through LETS (Local Exchange and Trading Systems) or collective buying direct from an organic farm.

A Future for the Land, meanwhile, as a diverse collection of contributions, tackles the difference between theory and practice within a different framework. It contains chapters not only by politicians from the Conservative and Labour parties in Britain, but also by an array of conservationists and activists from all around the world. Policy issues and practice are therefore considered both by those taking a more detached overview and by those working in the field, making this a book of great breadth and vision.

A Future for the Land also serves to illustrate the problem of semantics within the agriculture debate. Whilst those wanting to rise above factional disputes often talk in nebulous terms of "sustainable agriculture", those more passionately committed to a particular set of theories or practices will often seek either to ex-



tend the use of their term or to prove that it holds the ideological high ground. The subtitle of the book — *Organic Practice from a Global Perspective* — is an illustration of this trend.

It is stretching the definition of organic farming a long way to infer that it is concerned with general developments in the Amazon and in India, and the effects of global warming. There is little indication that questions of indigenous peoples' rights, GATT, trade issues between North and South, and energy, water and lifestyle questions are central to the concerns of the organic movement. *A Future for the Land* also has chapters on forestry as well as on permaculture, perhaps giving the misleading impression that these can be subsumed under the term organic practice.

Kiley-Worthington, on the other hand, tends to the other extreme, voicing a rather scathing attack on organic farmers, whom she implies are only interested in the premiums on their produce. Ecological agriculture, she argues, takes on board many more principles and involves much more fundamental change in lifestyle and in thinking. For her, permaculturalists have a more radical and holistic approach than organic farmers, though they have given insufficient thought to the role of animals in the system. Perhaps confusingly, in this context, *From the Ground Up* talks of "ecological agriculture", but then goes on to say that the best known form is "organic farming".

Whilst definitions of terms are far from agreed, the vision of these books is not that dissimilar. Whether talking about ecological agriculture, permaculture or organic farming, they all concentrate on the need to move away from industrialized agriculture and relocate food production within its wider societal context.

In the last analysis, the similarities between these books are greater than their differences. They are all well-written, thought-provoking and often inspiring. Whilst there may be disagreements about terms and about detail, it is heartening to think that the debate about alternatives to current agricultural policy and practice is gaining momentum. In defining what we don't want and giving space to visions of what we do want, contributions such as these must be fuelling the clamour for change.

Tracey Clunies-Ross

Tracey Clunies-Ross is an Associate Editor of *The Ecologist* and co-author of *The Politics of Industrial Agriculture*, Earthscan, 1992.

Nuclear Folly

ON THE HOME FRONT: The Cold War Legacy of the Hanford Nuclear Site, by Michele Stenehjem Gerber, University of Nebraska Press, Lincoln and London, 1992, \$35.00/£33.25 (hb) 312pp. ISBN 0-8032-2145-2.

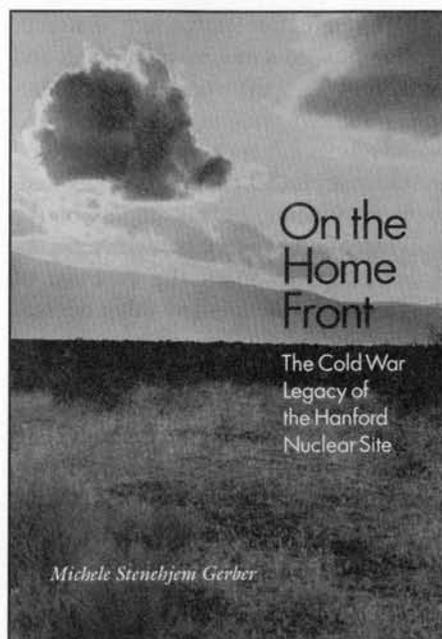
Hanford is the United States' military version of Sellafield — Britain's nuclear reprocessing centre on the Cumbrian coast. A vast industrial complex planted in the windswept desert of the north-west Washington State, Hanford was the workhorse for the Cold War arms race. By the 1950s, the site contained eight nuclear reactors whose spent fuel was routinely reprocessed to create plutonium. It produced the plutonium for the world's first atomic explosion in New Mexico in 1945, and for the bomb which was later dropped on the Japanese city of Nagasaki.

Known blandly as the Hanford Engineer Works, details of its operations were deliberately concealed from public scrutiny. Even the words plutonium and uranium were banned; instead, its feedstock was described as "base metal", its output as "product".

The real secrets were not revealed until 1986, when the US Department of the Environment released a mass of documents which showed that, quite apart from producing the core of weapons of mass destruction, Hanford had contaminated vast tracts of land with its radioactive discharges. A massive "clean-up" operation is now under way.

Using mainly official records, Michele Gerber's book tells the story of Hanford from its conception through to the recent revelations. The site was deliberately chosen because of its remoteness, and because the ground was considered likely to absorb any radioactive deposits. However, it is clear that the last thought in the minds of the people who started working there in 1943 was health and safety. They had to produce plutonium as fast as possible to beat the Russians in the arms race. Everything else was subjugated to that end.

So crude were the site's methods that liquid wastes were simply tipped into holes in the ground, steadily spreading out into the surrounding area. In the peak years of 1961-65, over 30 billion gallons of processing wastes were dumped. At one point, radioactive ruthenium was



found to be moving underground at the rate of 160 feet per day. The most highly radioactive wastes were stored in dozens of underground tanks. To save time, some of these were built with cast iron rather than steel pipes. Eventually, they corroded and started to leak thousands of gallons into the soil.

Such was the pressure that spent fuel "slugs" were removed from the Hanford reactors and reprocessed within a matter of days rather than months. This vastly increased the amount of radioactive iodine which emerged from the plant's chimneys in thick brown fumes and settled on the surrounding countryside. Iodine is particularly dangerous to the thyroid gland. In 1945, 345,000 curies of iodine were released into the atmosphere. During a legendary 1949 "Green Run", so-called because the uranium was still green or raw, almost 8,000 curies were released in a single day. The resulting cloud "probably got as many people as it could", one official said. Other waste was spewed through the reactors' cooling water into the nearby Columbia River, a prime area for salmon and trout fishing.

The 1986 papers showed that, whilst the public had been told that the wastes were well controlled and "harmless", and even workers were kept in the dark, all the discharges had in fact been well above the levels officially agreed for the site. Although Hanford has now stopped producing plutonium, a major operation is under way to try to contain some of the material still there, and to investigate the potential health effects on the surrounding population.

Gerber treads a cautious historian's

path through this frightening material, loading us with a mountain of detail and rarely forgetting the workers' now somewhat tarnished pride in their "mission".

Despite its rather dry, mechanical tone and the many issues it leaves unaddressed, such as epidemiological studies of the workforce or the local inhabitants, *On the Home Front* exposes the essence of Hanford. As with so many other nuclear enterprises, the determination to achieve the end meant that problems, including potential health effects, were simply swept aside in the confident expectation that science would eventually sort them out. Safety measures were bypassed in the interests of "national security".

The parallels with the THORP reprocessing plant at Sellafield are obvious. Here is a factory that, once operating, will also have clear health risks, will create a stockpile of potential bomb-making plutonium, and will accumulate other countries' unwanted radioactive rubbish. The safety record at the Sellafield site has been consistently bad. Yet all these issues are being ignored for short-term profit and a dream that plutonium will one day have a peaceful use.

One of the Hanford buildings has now been nominated for the National Register of Historic Places. It would be nice if it could also house an exhibition about the real hazards of plutonium production.

Crispin Aubrey

Crispin Aubrey is author of *THORP: The Whitehall Nightmare*.

As the Trees Crash Down . . .

SEEING THE FOREST AMONG THE TREES: The Case for Wholistic Forest Use, by Herb Hammond, Polestar Press, Vancouver, 1991, CAN\$46.95 (pb), 309pp. ISBN 0-919591-58-2 (distributed by Raincoast Book Distribution Ltd, 112 East 3rd Avenue, Vancouver, British Columbia V5T 1C8, Canada).

BEYOND THE BEAUTY STRIP: Saving What's Left of our Forests, by Mitch Lansky, Tilbury House Publishers, Maine, 1992, \$19.95 (pb) 453pp. ISBN 0-88448-094-1.

The serious crisis facing the world's forests is causing bitter conflicts in many regions among governments, environmentalists, forest-dwelling peoples, and the forestry and timber industry. At one level, these conflicts indicate a power struggle, but at a deeper level, they represent something very profound about human attitudes to nature and our place as humans within the natural order. As the trees crash down amidst the frenzied politics of the Amazon or the Pacific NorthWest of the United States, it is easy to lose sight of this fundamental truth. It is therefore most welcome to read critiques and analyses of the forces behind forest destruction, written in a such a clear way that ordinary citizens can understand and inform themselves about the problem.

The destruction of forests across Canada, especially throughout Vancouver Island, has attracted worldwide attention, leading environmentalists to dub Canada the "Brazil of the North". Herb Hammond is one of the most articulate, informed and respected critics of Canadian forestry. In *Seeing the Forest Among the Trees*, he makes a passionate plea for wholistic forestry — a way of valuing and managing forests that has at its heart the conviction that "we do not sustain the forest; the forest sustains us".

Hammond not only provides a clear and compelling critique of the current industrial forestry model, but maps out — in a highly-readable book, beautifully illustrated with colour plates and cartoons — an alternative approach which could achieve lasting social, ecological and economic benefits for the forest as a

whole (which includes humans, of course). Derived from a wealth of hard-won experience in the forest industry and in forestry research, his account has an intoxicating blend of authority and passion for a new way forward.

The clash of values between industrial, growth-oriented economies and an ecological worldview is epitomized by the controversy surrounding the vast forests of Canada. Right from the beginning, Hammond picks up the single most important philosophical issue in this clash — what is a forest? To the industrial forester, it is too often a collection of vertical logs waiting to be cut, while to the ecologist, it is an interconnected web of life. To the First Nations in the west of Canada, it has been home for thousands of years during which they have sustained the forest and have never ceded it or their territory to the federal or provincial government.

One of most distressing chapters covers the subversion of universities which teach forest destruction and manipulation, indicated in the distorted language they use: bark, limbs, tops and leaves of trees are "waste"; trees which fall over and rot are "debris"; insects which feed on trees are "pests"; and old trees are "decadent". This vocabulary makes it hard to object to industry cutting thousands of hectares of "decadent, infested" old growth stands, burning the "debris", and spraying the "pests".

Seeing the Forest Among the Trees is a lively, accessible book which will shock, educate, inspire and uplift. It is a passionate and intellectually inspiring milestone in current thinking about forests which owes a huge debt to the wisdom of Native American views on the place of humans within the forest.

The "beauty strip", meanwhile, is the buffer of trees left around clearcuts which border on rivers and lakes. To step "beyond the strip" is to step into a world of "distorted priorities, distorted metaphors and distorted logic" — hence the title of Mitch Lansky's hard-hitting, uncompromising and in-depth analysis of the myths and belief system surrounding industrial forestry.

Ever since being drenched with pesticides in his own backyard by modified Second World War bomber airplanes targeting the spruce budworm of the forests of Maine, Lansky has sought to challenge this practice and expose the brutal history of Maine's forests from the days of the early white colonists to their current domi-



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SEEING THE FOREST AMONG THE TREES

THE CASE FOR WHOLISTIC FOREST USE



HERB HAMMOND

nation and control by the timber industry.

Beyond the Beauty Strip is a polemical, radical and detailed examination of the failure of industrial forestry in its environmental, social and economic contexts. Although paying less attention than Hammond's book to new ways forward, Lansky's comprehensive arguments, like Hammond's, are an excellent resource for those who want to get to the roots of what industrial forestry means.

These books say an enormous amount about society's attitudes to forests. Their contrasting styles and presentation only serve to strengthen the conclusion that industrial forestry is fundamentally wrong. For the ordinary citizen concerned about forests, they support the contention made by forester Gordon Robinson that:

"you don't have to be a professional forester to recognize bad forestry any more than you need to be a doctor to recognize ill health. If logging looks bad, it is bad. If a forest appears to be mismanaged, it is mismanaged."

Not only is this view amply argued in both these books but, particularly in Hammond's work, an alternative way forward is presented. As a forester who has struggled with this debate for many years, I am extremely grateful for this.

Andy Wightman

Andy Wightman is the Development Officer of Reforesting Scotland, 51 Lorne Street, Edinburgh, EH6 8QJ, Scotland, an organization concerned with forests and land use in Scotland.

BOOKS DIGEST

- **DIGGING DEEP:** *The Hidden Costs of Mining in Indonesia*, by Carolyn Marr, Down to Earth, PO Box 213, London SE5 7LU, 1993, £5.00 plus £1.00 p&p within UK; £2.50 outside UK, (pb), 166pp.

Sheltering behind an oppressive militaristic government, multinational mining companies are quietly and steadily extracting coal, gold and copper from Indonesia at great social and environmental cost. This study by the International Campaign for Ecological Justice in Indonesia reveals the extent of the degradation and human rights abuse, setting mining in its political and international context.

- **JAPANESE WORKING FOR A BETTER WORLD:** *Grassroots Voices & Access Guide to Citizens' Groups in Japan*, Honnoki USA, 300 Broadway, Suite 39, San Francisco, CA 94133, USA, 1993, \$15.00/¥2,000 (pb), 184pp.

Japan is on everyone's list of environmental criminals. Is there a counterbalance? This guide lists some 700 Japanese grassroots citizens' groups fighting political and corporate injustices, infringement of human rights and environmental destruction from within their own country. Together with an outline of the socio-political environment in which these groups work and interviews with 47 activists, it is an excellent guide to the Japanese citizens' movement.

- **IN THE NATURE OF THINGS:** *Language, Politics, and the Environment*, edited by Jane Bennett and William Chaloupka, University of Minnesota Press, Minneapolis, 1993, \$17.95 (pb), 275pp. ISBN 0-8166-2308-2.

A disparate yet fascinating array of essays demonstrate how concepts of nature are invoked and constructed in popular, political and scientific projects and practices, ranging from the Bible to science fiction movies, from hunting to green consumerism, from ethnic minority agricultural workers to reproductive and genetic technologies. Investigating "nature" in this way may help to break the present impasse in Western human/nature relations.

- **ESSAYS ON WOMEN, MEDICINE AND HEALTH**, by Ann Oakley, Edinburgh University Press, Edinburgh, 1993, £14.95 (pb), 294pp. ISBN 0-7486-0450-2.

This collection of the author's essays written over the past 20 years looks at the context in which science and society place the intersections of women, medicine and health. Covering divisions of labour, motherhood and technology, she makes accessible the often impersonal world of current medicine.

- **CONFRONTING ENVIRONMENTAL RACISM:** *Voices from the Grassroots*, edited by Robert D. Bullard, South End Press, Boston, 1993, \$16.00 (pb), 259pp. ISBN 0-89608-446-9.

In the United States, people of colour, in both urban and rural areas, are disproportionately affected by industrial dumping, toxic landfills, mining and incinerators. This anthology, written by activists and academics, clearly illustrates with a range of case studies why environmentalists need to address issues of race and class in their politics.

- **NATURAL RELATIONS:** *Ecology, Animal Rights & Social Justice*, by Ted Benton, Verso, London and New York, 1993, £11.95/\$18.95 (pb), 246pp. ISBN 0-86091-590-5.

The current discourse on the moral status of animals serves as a basis for this critique of "human rights" which points out that liberal advocates of human rights and animal rights think of their objects as individuals rather than groups, in isolation from any social context. A wide-ranging argument infused with feminist and ecological insights, *Natural Relations* outlines an ecological socialist view of rights and justice concerned with the well-being of humans and animals and their vulnerability to harm.



Indian Coal Mining

The article "Piparwar: White Industries' Black Hole" (*The Ecologist*, March/April 1993) charges that the Piparwar project in southern Bihar is causing damage to the local environment as well as homelessness and unemployment for local inhabitants.

Unfortunately, much of the emotive content of the article disguises the fact that the project is actually using environmentally positive measures, and there has been an associated plan for the resettlement, compensation and employment of local inhabitants in the area affected by the project.

There are approximately 250 million people in India living in abject poverty. If the standard of living of Indians is to be raised, then access to energy supplies is a critical factor. The article asserts that the bulk of energy increases will not be advantageous to the majority of Indian people. *The Economist*, however, has argued that "the experience of the 1980s showed that poverty begins falling swiftly in India when the rate of growth reaches five per cent" (23 May 1992).

India's seventh five-year plan allows for significant new power generation capacity with increases in the range of 26,000 MW. With 70 per cent of its power generation coming from coal, India is keen to develop its coal resources. However, India's existing coal mines are generally inefficient and highly polluting.

Existing mines have not in the past incorporated environmental management practices. For instance, coal transport has been by truck rather than conveyor. Quarry techniques have led to external overburden dumps and open cuts left at the completion of mines. Coal washing has not always occurred. This has meant higher ash content coals used for power generation and unnecessary increases in

greenhouse gases.

The Australian government has provided \$61.5 million in Development Import Finance Facility funding over the three years to 1991/92 to develop the Piparwar coal project using state-of-the-art environmental technology. Australia is rated as the leading country in the world in the use of best practice in coal mining.

Piparwar is the first mine in the already extensively mined Karanpura region that incorporates built-in anti-pollution and land reclamation measures. The mine is being developed as a series of parallel strips with the mined out areas being progressively reclaimed throughout the operation. The process includes removal and stacking of topsoil; clearing of overburden and backfilling in the adjacent mined out areas; respreading of topsoil; and levelling for tree planting.

It also includes safeguards to prevent untreated run-off from the mine to the Damodar River. Haul roads and coal stockpile areas have been planned to allow for drainage. The effluent from tailings from the plant and washplant area will be pumped into a settling pond allowing clarification of water for reuse in the washplant. Two tributaries of the Damodar River which pass through the mine area are being diverted to minimize pollution risk.

The mining method involves in-pit crushing and conveying systems and a totally enclosed coal preparation plant which will significantly reduce dust and exhaust emission problems.

Noise pollution is also being minimized through specification of electrically driven (as opposed to diesel) equipment wherever possible.

The Australian Development Assistance Bureau (AIDAB) considers that the criticisms relating to environmental and social management aspects of the Piparwar project have been addressed in a comprehensive report prepared by consultants Kinhill Engineers Pty Ltd in January 1993.

Under Indian law, all environmental planning and works for the Piparwar project are the responsibility of Coal India Limited. The Government of India has advised AIDAB that an Environment Management Plan for the project has been recommended by the Indian Department of the Environment for final approval.

The Environment Management Plan provides for resettlement, compensation and employment for local inhabitants in the area affected by the project in accordance with government of India guidelines on acquisition of land for coal projects.

The Indian Government is committed to expanding its coal production. It makes environmental sense that its new coal mines are developed under the stringent environmental precautions in use in Australia, the acknowledged world leader in this field.

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Economic Depression

Your editorial, "The Infrastructure Lobby" (*The Ecologist*, July/August 1993) commented on the existence of a series of periods of economic expansion and depression which have been observed over the past several centuries, a sequence known as the Kondratiev cycle.

I became interested in the concept of long-term depression back in the 1970s, as the current depression became evident. The oil crisis was just one event within that depression, which has been caused by other more fundamental and lasting features of the capitalist system. The depression is not due "sometime just about now", nor did it commence with the 1973 oil crisis. It dates from around 1970.

The Kondratiev theory has passed the scientific test of prediction with flying colours, having forecast the occurrence of two further depressions, those starting in 1929 and 1970 respectively. It is, however, foolish to expect such long-term developments to repeat over centuries with a fixed time-frame and an unaltered pattern. The onset of each upswing and downswing of the cycle will quite obviously depend on historical events. Some years ago, Robert Heilbroner wrote that he was not a believer in the theory since he could not accept that the depression would end around 1990 as indicated by a simplistic imposition of an average-length depression on a complex world. The error in that line of argument is to demand absolute predictability of a pre-determined pattern.

By 1980, I had come to recognize the validity of the Kondratiev cycle hypothesis. I found that the economic system had failed to adapt when a reasonable level of material well-being was reached. Instead of a move to a stable leisure society, Western economies follow an overshoot and decline mode. In this pattern, each upswing is built upon the

reduction of productive capacity due to the previous collapse — an economy will grow if and when there is a need to do so.

In the last long-term depression, the world suffered an extraordinary and rapid collapse which was further compounded by the destruction of the Second World War. That was then followed by an extensive growth period. In this latest depression, increased government activities and the redistribution of purchasing power by the welfare state have softened the blow, and no global war has come to hasten the destruction. By the early 1980s, it was possible to foresee that the current long-term depression would continue for some time, certainly past 1990 (which it has) and probably into the next century.

The major reason for the failure of capitalism to make the adjustment from the juvenile growth phase to a mature stable system is the basic imperative for the generation of profit. With so many material wants satisfied by the existing level of output in the developed world, financial interests turned their attention to the Third World (now firmly caught in a poverty trap thanks to the excessive loans which resulted) and to the conquest of the public sector which is being turned towards profit generation. The chase for profit has stimulated the development of a consumer society and the takeover of modern propaganda tools such as television by corporate "sponsors".

The concept of a technological impetus driving each upswing does not hold up under closer examination. Indeed, in the present case, new technology has become widespread during a downswing depressed phase, and has contributed to structural unemployment as machines have replaced people.

The overshoot-and-decline mode of behaviour was recognized in *The Ecologist* editorial with the comment that "slumps tend to be caused by a glut". The development of new transport systems is correctly identified as one way to stimulate artificial wants in order to spend out of depression — although even that would only be a temporary palliative. Unfortunately, the overall pattern is not well understood; public ignorance and confusion have allowed the capture of the global economy by financial institutions such as the World Bank and International Monetary Fund.

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NEW ZEALAND

Peruvian Highway

Further to the excellent article by Alexander Shankland, "Brazil's BR-364 Highway: A Road to Nowhere?" (*The Ecologist*, July/August 1993), I can report that there is already mounting concern amongst NGOs and native peoples' organizations within Peru at the likely route of the Trans-oceanic highway from Acre to the Pacific coast of Peru, through the jungle department of Madre de Dios.

The current proposal of the major Brazilian construction firm, Odebrecht, is budgeted at \$1.065 million. Out of the total road construction cost of \$621 million, \$529 million is apportioned to the Peruvian section. The remaining \$444 million of the total budget will be spent on associated development projects along the road.

Within Peru, 920 kilometres of road will be constructed or upgraded. Between Puerto Maldonado and Lake Titicaca the road will skirt the northern and western boundaries of the Tambopata-Candamo Reserved Zone (TCRZ). The TCRZ is a 1.476 million hectare, semi-protected area containing, arguably, the greatest biodiversity on earth, quite probably exceeding that of Manu National Park, its northern neighbour, which also lies within Madre de Dios.

Four native communities, three with title to their lands, lie within the TCRZ and there are several others in close proximity to the projected route of the Highway. The project budget includes \$40 million to cover environmental protection and native

community related issues, in Peru and Brazil.

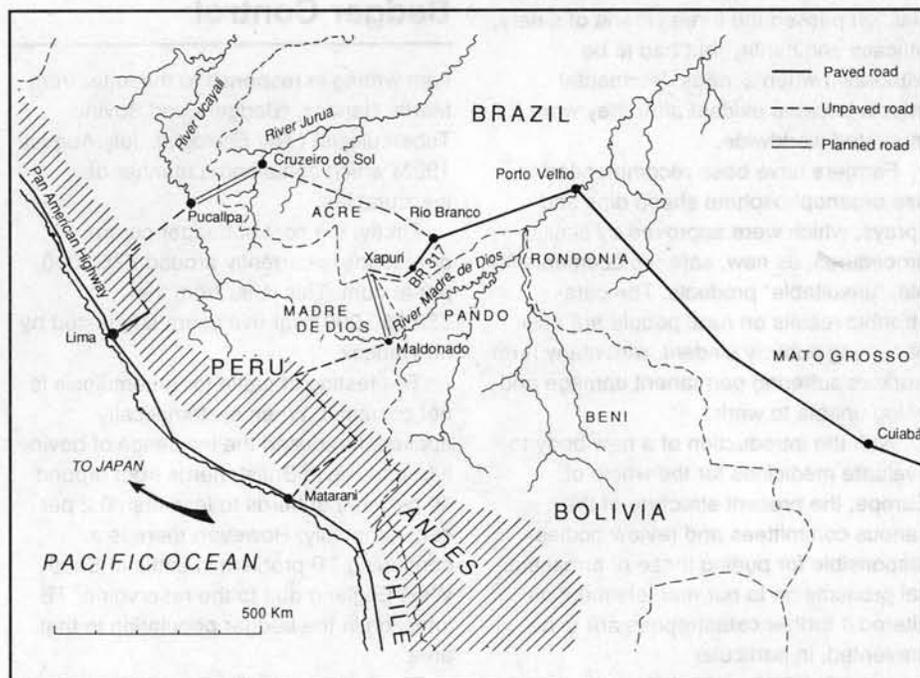
The first concrete steps in the link are being taken in Puerto Maldonado, the administrative capital of Madre de Dios, with the laying of the foundations for a 720 metre bridge over the River Madre de Dios; 2,500 tons of steel have been flown into Puerto Maldonado airport and the six kilometre road from the airport to the town centre is in the process of being asphalted.

A wide spectrum of local organizations, with interests in "sustainable" agricultural activities, conservation and the rights of native people, have already met to consider the future of the TCRZ and the range of options for the conservation of much of this unique area. This group is now paying attention to the upsurge in activity with respect to the Highway development.

The latest responses of local organizations, regular updates on the most recent actions and other developments in Madre de Dios are available to members of the Tambopata Reserve Society (TReeS) (Annual membership £5), a British NGO supporting traditional medicine initiatives of the native people and Peruvian scientists undertaking conservation related research projects in the Tambopata area.

John Forrest
Chairman

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Pharmaceutical Ethics

Whilst being bombarded with news of murders in Ireland and wars worldwide, the British public were probably unaware of the possible effects of a decision made in Europe in late October 1993 to set up the European Medicines Evaluation Agency with its headquarters in London. This agency will combine the British Veterinary Products Committee and the Medicines Committee with the European committees to form one large organization to evaluate and license new products for human and veterinary use. It will also review the escalating number of new products coming on to the market which are derived from genetic engineering.

The activities of the IRA in Ireland and the wars in former Yugoslavia and several African countries might last for the whole of this generation, but their effects could be temporary compared with the effects on future generations through biotechnology. By promoting biotechnology as the panacea to all human ills, many pharmaceutical companies see a chance to repair their reputations damaged by numerous drug scandals. Governments, meanwhile, anxious to get out of economic depression, are only too keen to promote company propaganda so as to maintain the viability of the pharmaceutical industry. For both government and industry, human and animal welfare is sliding down the list of priorities.

The previous procedure in Britain for assessing new products certainly had its faults. Thalidomide was only the forerunner of a long list of drugs with severe adverse effects. Drugs such as Opren and Halcion passed the three criteria of safety, efficacy and quality, but had to be withdrawn when serious detrimental effects became evident after they were marketed worldwide.

Farmers have been recommended to use organophosphate sheep dips and sprays, which were approved by similar procedures, as new, safe replacements for old, "unsuitable" products. The catastrophic results on rural people are now becoming publicly evident, with many farm workers suffering permanent damage and being unable to work.

With the introduction of a new body to evaluate medicines for the whole of Europe, the present structure of the various committees and review bodies responsible for putting these pharmaceutical products on to our markets must be altered if further catastrophes are to be prevented, in particular:

— a fourth criterion should be added to

safety, efficacy and quality, namely ethics. This is a vital necessity in view of the rapid advance in genetic engineering programmes;

- the assessment committees should not include members of the pharmaceutical companies which have a vested interest in products under review;
- the committees should not be partly financed by the pharmaceutical companies;
- members of the committees should not be silenced by the Official Secrets Act. Detrimental effects of new products should be made known to the veterinary and medical professions without reservation and also to any interested member of the public. The secrecy demanded to protect industrial processes from piracy can still be maintained without extending it to cover detrimental effects for the users of these products.

A system of developing new products which can improve health and eradicate disease can be evolved without the manufacturer's profit becoming the only true benefit. The new European body can be reorganized — or present standards of assessment can continue, allowing a potential Frankenstein situation to be created by a new technology run riot.

Jose MacDonald

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Badger Control

I am writing in response to the letter from Martin Hancox, "Badgers and Bovine Tuberculosis" (*The Ecologist*, July/August 1993) which contained a number of inaccuracies.

Firstly, the cost of badger control operations is currently around £750,000 per annum. This is far from the £50,000,000 over five years suggested by Mr Hancox.

The testing of cattle for tuberculosis is not cosmetic. When systematically applied, it reduced the incidence of bovine tuberculosis in British herds from around 40 per cent of herds to less than 0.2 per cent nationally. However, there is a continuing TB problem in cattle in South West England due to the reservoir of TB infection in the badger population in that area.

The study in Northern Ireland referred

to by Mr Hancox was carried out some years ago by the Veterinary Research Laboratory at Stormont to examine the spread of tuberculosis in the cattle population in the province. It concluded that, for the small number of herds studied, the most significant factor appeared to be cattle to cattle contact, but the study in no way ruled out transmission of the disease from badgers to cattle.

Finally the number of badgers killed in 1991 to protect cattle in South West England was 938.

A. T. Turnbull

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Alternative Trading

It may seem unreasonable to cavil at Kristin Dawkins' review of my book *Fair Trade* (*The Ecologist*, November/December 1993) which she describes as "excellent", but the review contains an accusation that is damaging not only to the whole argument of the book but also to the alternative trade companies (ATOs).

The review states that I limit discussion of proposed alternatives to "unfair trade" to promoting ATOs and that I "unfortunately emphasize the role of industrialized country markets, diminishing the purpose of the ATO to one of charity".

In fact, six whole chapters in the book discuss ways of achieving fairer trade, only one of which is about ATOs in industrialized countries (countries which provide 75 per cent of the markets for world trade). The main point of this chapter is that ATOs are about getting a better deal for small-scale producers in these mainstream markets, not by charity but by improving the price and the quality of their product.

Since better earnings for small-scale producers and improved quality generally mean more resources for their communities and concentration on "organic" products, this meets the review's other major criticism that "the overall restructuring" generated by "sustainable development . . . goes begging in *Fair Trade*".

Michael Barratt Brown

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Classified

DIARY DATES

January 29, 1994: **NON-VIOLENCE TOWARDS THE ENVIRONMENT: Teachings from the Traditions.** Mahatma Gandhi Multi-faith Memorial Service, St James's Church, Piccadilly, London, 6.30 pm. For more details, contact: The Gandhi Foundation, Kingsleigh Hall, Powis Road, London E3 3HJ. Tel: 081-981 7628.

February 18-20, 1994: **ENVIRONMENT, DEVELOPMENT and PEACE: Exploring Undergraduate Education.** The conference aims to facilitate discussion between the disciplines to integrate concern for environment, development and peace in the undergraduate curriculum. Registration forms from: Louise Hawkey, Kansas Peace Institute, Bethel College, 300 E 27th St. North Newton, KS 67117, USA. Tel: +1 (316) 283 2500; Fax: +1 (316) 284 5286.

March 15, 1994: **FARMING FOR THE ENVIRONMENT**, organized jointly by the SCI Agriculture & Environment and Pesticides Groups. For more information and registration forms, contact: SCI Conference Secretariat, 14/15 Belgrave Square, London SW1CX 8PS, UK. Tel: 071-235 3681; Fax: 071-823 1698.

April 24-29, 1994: International **LAND RECLAMATION and MINE DRAINAGE CONFERENCE** and the Third International Conference on the **ABATEMENT of ACIDIC DRAINAGE**. The conference includes an exhibition, workshops and field trips. For further information, contact: Debbie Lowan, American Society for Surface Mining and Reclamation, PO Box 18070, Pittsburgh, PA 15236-0070, USA. Tel: +1 (412) 892 6708; Fax: +1 (412) 892 4067.

May 12-13, 1994: **STOP THE DESTRUCTION OF THE WORLD.** A forum of workshops and a concert. For more information, contact: Centre of Integral Psychoanalysis, 6 Colville Road, London W11 2BP, UK. Tel: 071-727 4404; Fax: 071-792 9124.

May 19-25, 1994: **THE FUTURE OF NORTHERN FORESTS: Cultural and Biological Effects of the Consumption of Boreal Forest Products.** The second international conference of the Taiga Rescue Network will explore and combine indigenous, scientific and NGO perspectives to develop and shape action strategies to work at the local level within an international framework. To be held in Athabasca, Alberta, Canada. For information, contact: Sarah Winterson, Earthroots, 251-401 Richmond St. West, Toronto, Ontario M5R 3A8, CANADA. Tel: +1 (416) 599 0152; Fax: +1 (416) 340 2429; e-mail: eroots@web.apc.org

June 24-July 3, 1994: **CITIES and SUSTAINABLE DEVELOPMENT: Global Forum 1994.** A continuation of the debates started at the '92 Global Forum during UNCED. For more information, contact: Global Forum '94, Eastgate, Castle Street, Castlefield, Manchester M3 4LZ, UK. Tel: 061-234 3741; Fax: 061-234 3743.

June 28-30, 1994: **ENVIROMAN '94.** Exhibition and Conference in conjunction with Global Forum '94. For details of exhibition space and more information, contact: Rebekah Farr, Marstonbury Ltd, 12 Alban Park, Hatfield Rd, St. Albans, Herts AL4 0JJ, UK. Tel: 0727 831337; Fax: 0727 841694.

July 4-8, 1994: **International Symposium on COMMUNITY BASED SUSTAINABLE DEVELOPMENT**, to be held at the University of Sussex, UK, hosted by the International Institute for Environment and Development (IIED). For details, contact: IIED, 3 Endsleigh St. London WC1H0DD, UK. Tel: +44 (071) 388 2117; Fax: +44 (071) 388 2826.

August 22-26, 1994: **ENVIRONMENT and QUALITY OF LIFE IN CENTRAL EUROPE: Problems of Transition.** An interdisciplinary conference to be held in Prague covering Environment and Landscape; the GIS, Cartographic Systems and Remote Sensing; Physical Geography; Human and Economic Geography; Geographic and Environmental Education; the Emerging "New Central Europe". For more information, contact: International Geographical Union Regional Conference 1994, Albertov 6, 128 43 Praha 2, CZECH REPUBLIC. Tel: +42 (2) 249 12060, +42 (2) 296025; Fax: +42 (2) 249 15817, +42 (2) 296025.

COURSES

Towards a Fuller Humanity. The Oxford Centre for Human Relations is holding training courses in counselling, healing arts and psychotherapy. For details, contact: OCHR House, 1 Clarendon Court, Park St. Charlbury, Oxon OX7 3PT, UK. Tel: 0608 811378.

Life is for Learning at Lower Shaw Farm. Weekend courses include gardening, circus skills, writing, stretch, permaculture, women's studies, family crafts, music, building. For full programme, send SAE to Lower Shaw Farm, Shaw, Swindon, Wilts SN5 9PJ, UK. Tel: 0793 771080.

Beyond Vienna: Seminars on Women's Human Rights at Department of Law, School of Oriental and African Studies, 46-47 Russell Square (Room B) London WC1, UK. Once a month, Wednesdays, 6-8 pm from January to June. For information contact: CHANGE, PO Box 824, London SE24 9JS, UK. Tel/Fax: 071-277 6187.

MISCELLANEOUS

Green Battle Lines — a publication of poetry, prose and cartoons to inspire environmental campaigners. Price: £1.50 individuals, £1.00 groups. Available from PROBE, 393 Upper Shoreham Road, Shoreham-by-Sea, West Sussex BN43 5NF, UK. Tel: 0273 455204.

Tree Free Paper. For details, send SAE to John Hanson, Wareham Manor, Lyme Regis, Dorset, UK.

Green Events, a monthly information and publicity calendar, distributed in and around Oxford (including Bristol, Devon and London), listing events, services, businesses, organizations and individuals that consider themselves "green". Estimated readership 10,000. For details, contact: *Green Events*, Medley House, Weston-on-the-Green, Oxon OX6 8TN, UK. Tel: 086989 603.

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Jack Frazier, *The Great American Hemp Industry*. Fast-growing hemp is a sustainable, tree-free way of producing paper, fibre, food and fuel. 110pp, paperback, 1991, £4.50.

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Ancient Futures: Learning from Ladakh. The breakdown of Ladakh's culture and environment forces us to re-examine what we really mean by progress. 60 minutes. All profits to the Ladakh Project. £20.00

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