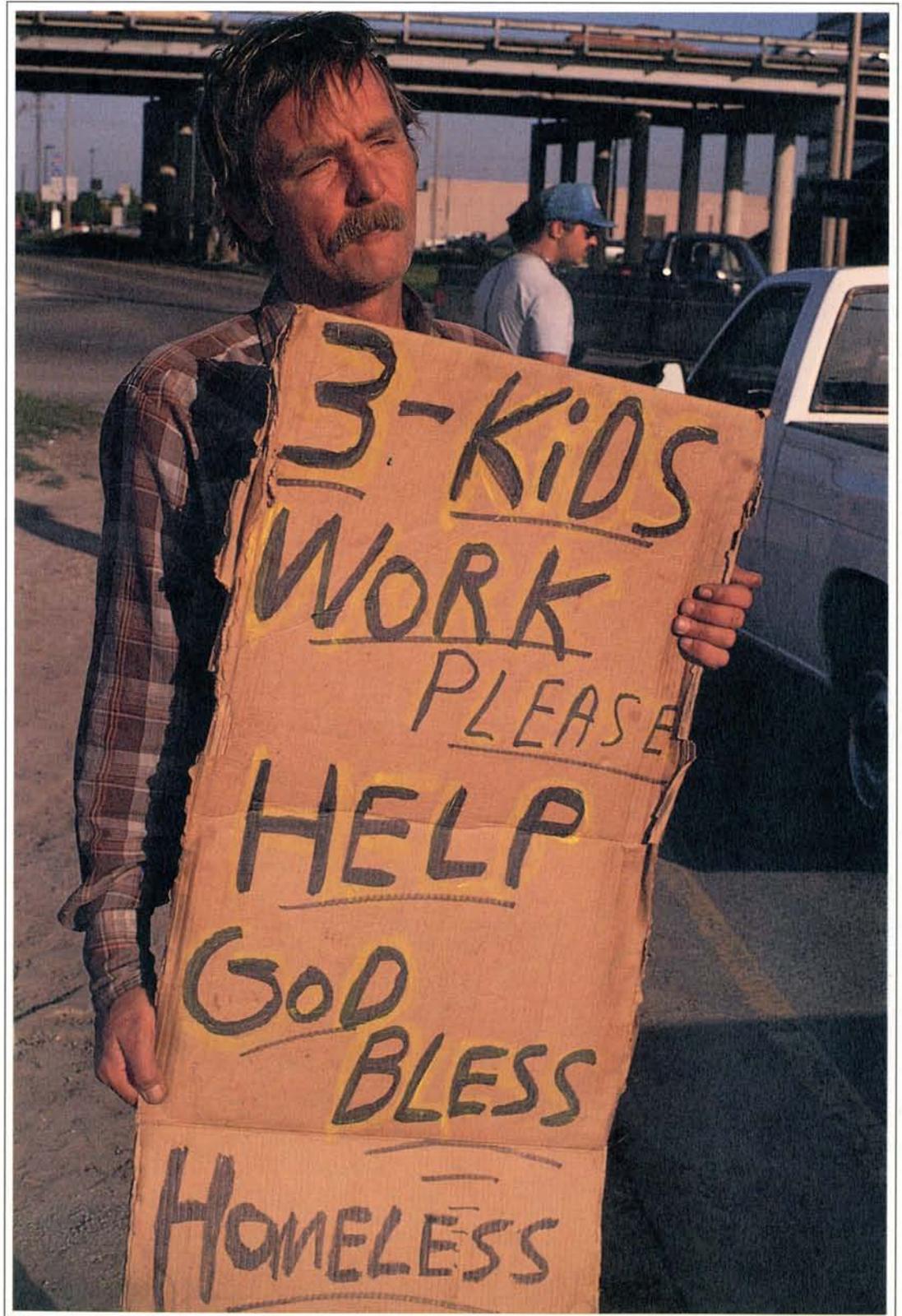


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Basta!

Mexican Indians Say "Enough!"

*"They wrenched off our fruits . . .
They ripped off our branches . . .
They burned our trunk . . .
But they could not kill our roots."*

Consejo Guerrense
500 años de Resistencia Indígena
February 1994

At midnight on 1st January 1994, NAFTA — the North American Free Trade Agreement between Mexico, the US and Canada — came into force. Barely two hours later, thousands of Indians armed with machetes, clubs and a few guns occupied four of the main towns in Chiapas, a province on Mexico's southern border with Guatemala, and declared war on the Mexican government. Two dozen policemen and an unknown number of rebels died in the assaults.

The following day, Mexican President Carlos Salinas dismissed the uprising as the work of "a local group of professionals of violence, probably foreigners" and launched a massive attack upon the rebels using tanks, Swiss airplanes, US helicopters and 15,000 troops. Nobody knows the full extent of the violence that followed, but there were reports of civilian killings, torture, summary executions and unlawful detentions.

The rebels soon revealed, however, that they were Indians of different ethnic groups calling themselves Ejército Zapatista de Liberación Nacional (EZLN). Rebelling not only against the President and the army, they appealed for an end to 500 years of oppression and 40 years of "development", expressing the hope that a coalition of political parties would organize free elections and allow the Indians to reclaim their commons and to regenerate their own forms of governance and the "art of living and of dying". It was time to say "*Basta!* Enough!"

Nationwide Support

The ideological slant of the EZLN's declarations was puzzling: a guerilla movement struggling for democracy, without aspirations to power nor a Leftist orientation? An Indian movement not showing ethnic fundamentalism — but opposing NAFTA? A movement of illiterate peasants talking about transnational capital and using electronic networks to gain support for their struggle?

Within a few days of the rebellion, opposition groups all over Mexico came out in support, not necessarily of the rebels' violent actions, but of their demands — many of them adding their own demands to the political agenda. The dimension and quality of the national mobilization were unprecedented. People occupied the streets, broke decades of press control, and gained access to wide communication networks both inside and outside Mexico. All the EZLN declarations concerning freedom, justice and democracy were broadcast to the outside world through fax and electronic

mail as soon as they were released.

In the face of this mounting opposition at home and abroad, and in an attempt to restore its tarnished image, the government had little choice but to change course. The President called a ceasefire and amnesty and made a number of political concessions: changes in the cabinet, the removal of the inept interim governor of Chiapas, the establishment of investigatory commissions and committees, a pledge to ensure "cleaner" presidential elections in August and — of course — the promise of tons of money to everyone in Chiapas, particularly the rebels.

Fool's Paradise

It may be that at first President Salinas really did believe that the uprising was engineered by a small group of outside agitators without local support. He was, after all, riding a wave of political and economic euphoria since his election in 1988. Hadn't he hauled Mexico out of the depths of its 1982 bankruptcy to become a showcase developing country about to break into the ranks of the economic first division with its entry into NAFTA? Was not his government's handling of economic policy, which included the most efficient and rewarding privatization programme in the world, generally acknowledged to be brilliant? Had he not reduced inflation from three figures to a single digit in a few years? Was his administration not a shining example of what a competent, responsible and concerned government — with a little aid from the World Bank and the IMF — could do to tackle underdevelopment?

It was unthinkable to Salinas that these accomplishments, so widely lauded in the international community, might not be appreciated by the peasants and city dwellers of Mexico. In the previous five years, Mexico had garnered more foreign capital than in its whole previous history. True, more than half of it was not really invested: it went to the Mexican Stock Exchange, which became the most profitable stock exchange in the world in 1993. Most of these profits returned to the foreign investors, but they also fell into the hands of the 282,000 Mexican investors at the cutting edge of the economic revolution — more money than the annual health, education and social budget for some 85 million Mexicans. But for the poor majority, the government had instituted the "Pronasol", a "war against poverty" programme which the World Bank described as the best in the world, designed to ensure that the benefits of development would "trickle down" to the masses waiting peacefully in line.

Chiapas

Had the President listened to some of the alarm bells coming from Chiapas in these years, he might not have been so sanguine.

Chiapas is one of the richest of Mexico's provinces. It produces around a hundred thousand barrels of oil and five hundred billion cubic metres of gas per day; its dams supply more than half of the country's hydroelectric power; it accounts for one-third of the national production of coffee and a good percentage of the country's cattle, timber, honey, corn and other products. To connect these riches with the capital — and to bring modernity to Chiapas — a freeway is being built to Mexico City passing through the large El Ocote forest.

Yet Chiapas is also one of the poorest provinces. A third of its 3.5 million inhabitants are Indians, who have suffered various forms of oppression and discrimination for centuries, both from foreigners and from a highly conservative local upper class. Over the last 40 years, the drive to develop its resources has compounded oppression to the level of genocide.

Resistance to the occupation of communal land has been crushed by gross violations of human rights. Thousands of people, mostly Indians, have been displaced by dams, oil or cattle ranches and pushed into the Selva Lacandona forest — the biggest tropical forest in North America — only to serve as a scapegoat for its destruction by ranchers and loggers. Many Indians now live in desperate poverty, with little assistance from the state: 30,000 died last year of hunger and associated diseases in the area of the uprising. Yet the money devoted to the entire social budget for Chiapas is just a fraction of the cost of the new highway to Mexico City.

Over the last few years, the cornered, destitute and humiliated Indians have used every peaceful means at their disposal to present their grievances against this development to the government: economic and political organizations, manifestos, demonstrations, sit-ins, even a march of a thousand miles to Mexico's capital. The Mexican government, assuming that Pronasol was more than enough to keep things going, ignored the mounting protests, and delegated the responsibility for dealing with them to the provincial administration.

The former governor of Chiapas, González Garrido, conceived a three-pronged strategy: he protected armed landowners and cattle raisers in their exploitation of Indian land and people; he supported the creation or strengthening of a pliant Indian elite to keep political control of the villages; and he gave a free hand to his police to operate under the pretext of combating drug trafficking — all under the respectable cover of development and modernization. The government poured into Chiapas more Pronasol dollars per capita than into any other province. A sizeable proportion of that money was used to build new prisons; the bulk of it was channelled into the villages through existing structures, thus remaining in the corrupt hands of the controlling elite. González Garrido convinced everyone that the strategy was a complete success. Last year, presumably for his services to "development", he was promoted to Minister of the Interior.

Developed to Death

The Chiapas uprising — and the support given to it throughout the nation — therefore came as a shock to the government. The revolt was not a response to a *lack* of development — a call for cheaper food, more jobs, more health care and more education — or to poverty or misery. It was a dignified reaction to *too much* development. It arose because people opted for a more dignified form of dying.

There has been a constant allusion to death in the communiqués of the EZLN. Alluding to the Federal Army, one of its captains said, "Let's see who is more ready to die, they or us". It is not a mere slogan. Expelled from their lands, oppressed by a violent structure of power, with death visiting their children every day, they chose dignity. They knew they were confronting forces infinitely superior and that there was no hope of a military victory. They expected massive and brutal retaliation, killing most of them, perhaps all of them.

Yet this apparently futile gesture caught the imagination of millions of people throughout Mexico. The EZLN was not prepared for such solid support and neither was the government. In the hiatus, a moment arose for dialogue and negotiation, and the EZLN seized the opportunity to launch an eloquent and unprecedented attack upon the process of development.

Rather than demanding the expansion of the economy, either state-led or market-led, the EZLN wish to expel it from their domain. They are pleading for protection of the "commons" they have carved out for themselves in response to the crisis of development, ways of living together that limit the economic damage and give room for new forms of social life. Within their traditional forms of governance, they keep alive their own life-support systems based on self-reliance and mutual help, informal networks for direct exchange of goods, services and information, and an administration of justice which calls for compensation more than punishment. They are challenging the social imagination to conceive political controls that allow these post-economic initiatives to flourish.

To challenge the rhetoric of development, however, is not easy. Mexico's economic growth, the promise of prosperity tendered by the IMF and the World Bank, the massive investment in modernity as an integral element of the war against poverty — these have been cast as truths beyond question. But the EZLN has dared to question them — it announced to the world that development as a social experiment has failed miserably in Chiapas.

A New Kind of Movement

The unexpected support for the EZLN movement lies in the fact that it encapsulates new aspirations. As such, it is hard to categorize. It has no one leader, and its collective leadership of elected representatives from 1,000 communities consciously resists any form of personality cult. It owes little to the classic model of a Marxist guerilla group since it eschews any political platform or ideology. It is not a fundamentalist or messianic movement: its members come from different Indian peoples, profess different religions, and are explicitly ecumenical. Nor is it a nationalist movement: it shows no desire for Chiapas to become a small state, an indigenous republic, or an "autonomous" administrative district, in line with the demands of minorities in some other countries. The EZLN refuse to change the nature of the movement by becoming a political party, for example. "Nothing for us, everything for all" they respond to such proposals.

The movement does, however, owe something to the long tradition of peasant and Indian rebellions that have had such an influence upon Mexico's history: to Pancho Villa, who inspired the EZLN's military strategy, and Emiliano Zapata, from whom the EZLN take their name and their claim for land and freedom. Villa and Zapata are renowned not simply for occupying the Presidential Palace at the head of victori-

ous peasant armies in the 1920s, but also for immediately abandoning it because they did not want to seize power and govern the country, but only to reclaim the peasant commons.

Yet the EZLN is at the same time a contemporary movement, using modern means of communication and adopting a political style and direction that might be termed "post-modern". It is born from disillusionment with the ballot-box and party-political apathy, and from popular resistance to conventional forms of participation.

The Chiapas uprising signals the efflorescence of a wider movement that until now has been gathering momentum beneath the surface of social awareness both in Mexico and elsewhere. It comprises networks of groups — coalitions of discontent — which share certain characteristics: they are deliberately open and allow for the participation of different ideologies and classes; they distrust leaders and centralized political direction; they consciously avoid any temptation to lead or control the social forces they activate; they opt instead for flexible organizational structures, which they use for concerted action, rather than for channelling demands; they explicitly detach themselves from abstract ideologies, preferring to concentrate on specific campaigns (for example, against a dam, a road, a nuclear plant or the violations of human rights); and they exhaust any democratic means and legal procedures available before resorting to direct action or revolt.

The EZLN has manifested all these traits in its political stance, as have its supporters. For example, when the national government attempted to isolate the EZLN by convening 280 Indian and peasant organizations of Chiapas, the groups responded by publicly adopting the EZLN claims as their own in support of its struggle. Another illustration of conflict being turned around was on the second day of the uprising when the EZLN captured, tried and convicted one of the most hated men in Chiapas, former governor and army general Absalón Castellanos. Many expected that he would be shot as an exemplary punishment. Instead the EZLN

sentenced him to work in a community for the rest of his life — and then handed him back to the President in good health. Such tactics are conciliatory rather than divisive and help explain the EZLN's remarkable ability to act as a social nucleus for diverse coalitions of discontents throughout the country whilst at the same time avoiding ideological and political rivalries and sterile polemics.

A New Hope

Perhaps it is foolish to suggest that the Chiapas uprising offers some hope for the future. Mexico may be on the verge of more violence. Old and modern forms of fundamentalism are already on the rise, and the risk of a civil war, localized or not, is not out of the question. It will not be easy to dismantle a political regime so rigid and entrenched, nor to stop all the forces of development still behind the government. The assassination on 23 March of Luis Donaldo Colosio, the presidential candidate of the main political party, illustrates the dangers we are now confronting.

However, the non-violent reactions of those coalitions of discontents have been so extended, so full of imagination, strength and creativity, so well-rooted in people's organizations, that I still hold the hope that there will be no need of more armed violence and that we will be able to stop institutional violence in a new regime. It may be that this regime will be able to combine government for the people, through representative democracy, with government by the people, in their new commons. I hope that the new coalitions will have the courage to persist in non-violence so as to reclaim the commons and regenerate the art of living and of dying — with dignity.

Gustavo Esteva

Gustavo Esteva is a grassroots activist and a deprofessionalized intellectual living in a small Indian village in southern Mexico.

White Satanic Mills?

For several hundred years, many parts of England's green and pleasant land were dotted with windmills. Even as late as the 1960s when most corn mills had become picturesque relics, many farms still used small, multi-bladed, steel windmills to pump their water supply. Few people objected to these machines on the grounds of their size, ugliness or "visual intrusiveness". But as farmers gradually traded in their windmills for generators or mains electricity supply, wind technology went into hibernation, kept barely alive by a small group of visionary engineers who championed its use as renewable energy.

In the last four years, however, as a result of government subsidies, clumps of 400-kilowatt turbines up to 200 foot tall have sprouted all over the country like giant, post-industrial snowdrops. There are now some 400 windmills on 21 sites producing about 0.2 per cent of Britain's electricity — one installation in Montgomeryshire consists of 100 separate turbines. Applications have been lodged for another 230 sites, the largest, in Keilder Forest in Northumberland, involving 200 turbines and covering some six square miles.

Yet, despite popular support for renewable energy, this sudden crop of "windfarms" has blown up a storm of controversy. A broad alliance of environmentalists, business interests and local citizens complain that the farms are economically superfluous, noisy, visually intrusive and invariably sited in prominent positions in beautiful windswept countryside. This opposition is so influential that the revival of what was once an innocuous technology may grind to a halt.

New Rivals and Strange Bedfellows

The current controversy has revealed an ominous rift within Britain's environmental establishment. Campaigning against windfarms are organizations concerned with landscape conservation: the Ramblers Association, the Council for the Preservation of Rural England, and the Campaign for the Protection of Rural Wales (CPRW). Their case was outlined by Dr Neil Caldwell, director of CPRW:

"Every consumer of electricity has to pay a surcharge

which the government collects and hands over to multinational companies so that they can cover our beautiful Welsh hills with wind turbines that produce a tiny trickle of energy. If we really want to tackle global environmental problems and protect the countryside, this money must be used instead to help cut energy consumption."

Supporters of windpower include environmental organizations which advocate the development of sustainable energy, notably the Royal Institute of International Affairs and, (although with increasing reservations) Greenpeace, Friends of the Earth and the Green Party.

Both sides claim widespread public support. And both find themselves in uneasy alliance with certain industrial interests. An organization called the British Wind Energy Association lobbies vigorously on behalf of corporate investors in windpower, such as British Aerospace, construction company Taylor Woodrow and the Japanese firm Tomem International, and of landowners who can expect to extract around £2,000 per year in rent for every turbine planted on their "farm".

On the other side of the fence is a curious organization called the Country Guardians — though it does not rush to defend the countryside unless a windfarm constitutes the threat. One of its representatives is Sir Bernard Ingham, consultant to British Nuclear Fuels and former press secretary to Margaret Thatcher, who has written in *The Times* about the "rape of rural Britain" by windmills. Another is Geoffrey Ratcliff — former chairman of the Energy Industries Research Liaison Committee, which includes the research directors of British Gas and of the coal and oil industries — who has championed the virtues of "peaceful unspoilt countryside". Neither of these self-styled country guardians is noted for his opposition to the dense network of pylons radiating across the countryside from nuclear and fossil fuel power stations.

Prevailing Windmills

This unseemly brawl is a direct result of the British government's opportunistic management of renewable energy. For years, the government hardly funded experimental bodies, such as the Centre for Alternative Technology in Wales, which paved the way for a benign source of alternative energy suitable for the British climate.

But in 1990, in the run-up to UNCED, the government decided to channel a small percentage of its tax imposed on non-renewable forms of energy into windpower. Industrialists were drawn like flies to a subsidized price per kilowatt, about three times as high as that paid for fossil fuels. Thus many British country-dwellers who have never seen a small, two-kilowatt wind generator in action may well find themselves living near a two-megawatt windfarm, or affected by planning proposals for one.

Members of the public are understandably alarmed at these installations, the more so since according to Gerry Swarbrick of the South West Electricity Board, "there has not been a great deal of benefit for local communities". In some cases, windfarms have been forced on communities by central government. At Truro in Cornwall, for example, environment secretary John Gummer overturned the local council's decision to refuse planning permission for a windfarm.

The opposition to this centrally imposed windpower programme is now so great — or so noisy — that the government is keeping the programme under close rein. In March this

year, energy minister Tim Eggar announced that no more than 20 of the 230 current applications for windfarms in Britain would be granted.

People's Windpower

There have been — and still are — ample opportunities for the government to develop a policy that does not result in such confusion and acrimony. This could be achieved by delegating practical decisions about energy production and consumption to local communities, by letting them derive benefit from windfarms and decide for themselves whether they want to take advantage of those benefits or not.

For example, if it is deemed necessary to fund a 20 per cent reduction of fossil-fuel consumption within a given period to reduce global warming, then representative local bodies could be subsidized to achieve this percentage reduction in whatever way they think best: by investing in windpower, solar power, biomass production or energy efficiency — or simply by reducing energy consumption and using the subsidy elsewhere.

Community windpower is by no means an impractical proposition. Denmark obtains over three per cent of its energy from windpower — 15 times as much as Britain — through some 3,500 wind turbines owned by cooperatives whose shares are typically restricted to local people and related to individual energy consumption. But as Gerry Swarbrick observes "the policy structure of the windpower programme in Britain has not been to encourage local self-sufficiency, as it has in some other European countries."

The development of smaller-scale community projects is not easy in a declining rural economy; nor is it helped by the degeneration of local democracy as a result of successive government measures to increase the size of local administrative units and to force councils to conform to central policy. But these trends are associated with a long-term government strategy to undermine local autonomy, and it is in this context that Britain's windpower programme should be viewed — as an attempt to nip in the bud a worrying devolutionary tendency which might have led to energy cooperatives, communities self-sufficient in energy and — who knows? — even the dismantling of the national grid and its beloved pylons.

Helicopter Technology

Environment and community are inextricably linked. If the new windmills — unlike those of earlier centuries — impose upon the landscape, it is because they impose upon the community, rather than growing out of it. Large windfarms are not rooted in local aspirations, but consortia package deals dropped in by helicopter as part of a panicky global sustainable-management strategy.

The uproar that has ensued is an indication of the response that is likely to greet many of the centrally-controlled yet market-driven solutions which UNCED promises to deliver. Similarly, the rifts that have become visible within the environmental movement are likely to widen unless all sides recognize one primary co-ordinate — that little of lasting value will be achieved if alternative solutions are imposed over the heads of local communities.

Simon Fairlie

Dark Victory

The Global Impact of Structural Adjustment

by

Walden Bello and Shea Cunningham

Over the past 15 years, it is not just countries of the South which have been structurally adjusted as part of the US administration's agenda to discipline the Third World and roll back the influence of the state. The Asian Newly-Industrialized Countries and the US economy itself have also been targeted with economic and trade measures which advantage transnational corporate interests. The result of global adjustment is greater insecurity in peoples' living and working conditions worldwide.

The riots that broke out in Los Angeles in May 1992 bore more than a passing similarity to the food riots that had erupted in countries such as the Dominican Republic, Venezuela and Brazil in the 1980s. All were essentially poor peoples' responses to greater insecurity in their working and living conditions — to a wrenching process known in the parlance of technocrats and economists as "adjustment".

It is a process that has helped send per capita income in Africa spiralling down to the level of the 1960s, and in Latin America, to the level of the late 1970s.¹ For most people in the South, the defining features of the last two decades have been the undermining of livelihoods, mounting debt, increasing inequity, the virtual loss of economic sovereignty, and the increasing hollowness of "political independence".

But in the North, too, livelihoods have become increasingly insecure. By the 1990s, median family incomes in the US had dropped to the level of the late 1970s; the proportion of the population living in poverty had risen significantly; and wealth and income inequality had shot up to levels not seen since the 1930s. Perhaps the most telling statistic was that by 1991, more than one out of every five children was defined as "poor".²

As the "New World Order" begins to take hold, it can be seen that the collapse of the South and the greater insecurity in the working and living conditions of most people in the North are consequences of the same underlying policies — policies which were unleashed in the 1980s by Northern political and economic elites as part of a sweeping strategy to shore up the domination of the global economy by transnational interests, primarily US corporate interests. In the North, the strategy has involved deregulating the economy, cutting back social spending and driving down wages. Elsewhere, structural adjustment programmes and unilateral trade measures have been ruthlessly employed to prise open markets for transnationals and hobble potential (or actual) competitors, such as the Newly Industrialized Countries (NICs) of East Asia.

These twin strategies of adjustment are epitomized by the foreign and domestic policies initiated by the Reagan and Bush Republican administrations in the 1980s — policies which President Bill Clinton's Democratic administration has shown no sign of discontinuing.

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Dismantling the New Deal

Domestic "adjustment" was central to the agenda of the free-market ideologues who came to power with the Reagan administration in 1981. For the previous 40 years, US domestic policy had been framed by a fragile "social contract" between capital, labour and government that had emerged in response to the Great Depression of the early 1930s. The basis of that contract — famously dubbed the "New Deal" by President Franklin D. Roosevelt — was a shared assumption that the economic health of American capitalism and the social well-being of the country rested on the maintenance of mass purchasing power. Labour and capital thus had a mutual interest in the state's taking an active role in the economy, primarily through manipulating fiscal and monetary mechanisms, in order to assure stable economic growth.

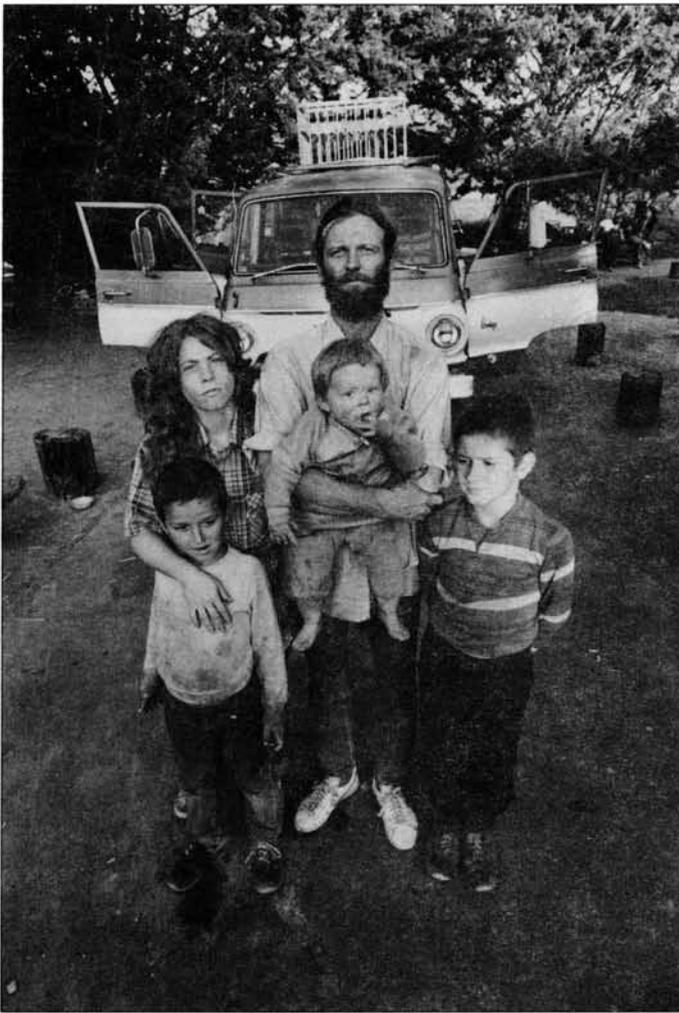
For corporate America, such state-managed capitalism had distinct advantages. Although initially wary:

"oligopolistic companies could see the wisdom of providing purchasing power, especially when it became clear that unions and collective bargaining were not really going to challenge their control of the system — they were merely going to codify work force practices and protect workers from some of the most arbitrary company practices. The unemployment compensation system also helped companies maintain their work force by, in effect, supplementing wages during layoff."³

By the early 1970s, however, the social contract was fraying. Corporations complained about high tax rates which diverted resources from reinvestment and from research and development. Even more central to their disaffection was their increasing competitive disadvantage in the global market which they attributed to the relatively high wages of US workers. The average monthly income of a worker in the US was \$1,220 in 1972, while in Taiwan it was \$45, in Singapore \$60, in South Korea \$68 and in Hong Kong \$82.

Industrial Flight

If "expensive" US labour was the problem, then cheap foreign labour was the solution — and US capital voted with its feet.



A homeless family in Mendocino County, California 1989. The "Reagan Revolution" created pockets of enormous wealth while marginalizing the vast majority. The moral justifications given for undermining US industry and the US working class have been tinged with more than a hint of hypocrisy. Walter Joelson, chief economist at General Electric, refers to the question of global equity: "Let's talk about the differences in living standards rather than wages. What in the Bible says we should have a better living standard than others? We have to give a bit of it back." Mr. Joelson (whose salary probably places him well into the "camel through a needle's eye" bracket), gives no explanation — biblical or otherwise — as to why this reapportionment of global wealth should be at the expense of the poorer members of US society rather than the wealthier.

The Assault on Labour

Industrial flight to the low-wage economies of the Third World severely undermined organized labour's bargaining position and facilitated the dismantling of New Deal policies.

The position of labour was further weakened by the deliberate triggering of a deep recession. According to economists Bennett Harrison and Barry Bluestone:

"[For] business, the deep recession did precisely what it was designed to do. With more than 10 million people unemployed in 1982, it was impossible for organized labour to maintain wage standards, let alone raise them . . . The real average weekly wage fell by more than 8 per cent between 1979 and 1982, and failed to recover at all in the next five years. Essentially, with wage growth arrested by unemployment, what growth occurred during the Reagan period redounded mostly to the profits side of the capital-labour ledger."⁹

The Reagan administration also sought direct confrontation with organized labour. The Professional Air Controllers' Union (PATCO) strike in 1981 ended with the wholesale dismissal of all the strikers and the dissolution of their union. Labour relations in the next few years were marked by aggressive union-busting, prevention of unionization through right-to-work laws, replacement of full-time with part-time workers, wage and benefit cuts under threat of plant closure, increased subcontracting of work, and even aggressive reduction in the work forces of profitable corporations.

The success of the assault on organized labour was apparent in wage trends: between 1979 and 1989 the hourly wages of 80 per cent of the workforce declined, with the wage of the median worker falling by nearly five per cent in real terms.¹⁰ By 1990, the richest 20 per cent of the population had the largest share of total income ever recorded, while the majority — some 60 per cent — had the lowest and had actually experienced a decline in income.¹¹

Adjusting America

Upward redistribution of income was accelerated through tax reforms. The tax contributions of the richest one per cent of the population fell by 14 per cent, while that of the poorest ten per cent rose by 28 per cent in the mid-1980s.¹² In addition, the Reagan administration launched an assault on the social safety

From 1965 to 1980, private US investment abroad rose fourfold from \$50 billion to \$214 billion in real terms.⁴ While much of this investment was directed at gaining a foothold in local markets abroad, a growing proportion was devoted to producing commodities for the US. For instance, the proportion of sales of US multinational affiliates in the Asia-Pacific region which was exported to the US market rose from 10 per cent in 1966 to more than 25 per cent by 1977.⁵

This "hollowing out" of US-based industry was especially marked in sectors such as consumer electronics. The effort to compete with high-quality Japanese TV sets flooding the US market in the 1960s led US firms to relocate most of their operations to Third World countries such as Mexico, Taiwan and Singapore. Jobs in the US television manufacturing industry fell by 50 per cent between 1966 and 1970, and by another 30 per cent between 1971 and 1975.⁶

The emigration of industry continued throughout the 1980s. Some 600,000 jobs that would otherwise have been located in the US have now been created by affiliates of US corporations in northern Mexico, attracted there by wages that are between one-tenth and one-fourteenth the level of US wages and by a relaxed customs regime.⁷ The process will accelerate under the North American Free Trade Agreement (NAFTA), which has eliminated tariff barriers to the flow of goods among Mexico, Canada and the United States. According to one study, NAFTA is likely to promote the migration of from 290,000 to 490,000 more US jobs over the next 10 years.⁸

net created by the New Deal. By 1985, funds for entitlement programmes — such as food stamps, training programmes, Aid to Families with Dependent Children (AFDC), and social security benefits — had been cut by close to \$30 billion, while defence spending was increased by \$35 billion.¹³

State governments followed Washington's lead, with 40 states cutting social welfare programmes. Indeed, by the end of the Republican period in 1992, the combination of federal and state cuts had resulted in welfare benefits (AFDC and food stamps) being cut by 40 per cent in real terms from their levels in the early 1970s.¹⁴ Federal aid to cities was also drastically curtailed — plummeting by 60 per cent from its level in 1981 — with a predictable upsurge in crime, drugs and inner-city poverty.

The South Within the North

By 1992, the United States had become “the most unequal of modern nations.”¹⁵ Indeed, its domestic version of “structural adjustment” had driven the living standards of many US Americans to Third World levels. Some 20 million were said to be experiencing hunger; 25 million — one in every 10 — were receiving food stamps;¹⁶ and the infant mortality rate for African-Americans stood at 17.7 infant deaths per 1,000 live births — higher than that for some of the developing countries of the Caribbean, such as Jamaica, Trinidad and Cuba.¹⁷

Adjustment also created tremendous stresses and strains in society. As the standard of living for the poorer half of the nation deteriorated, US expenditure on criminal justice increased four times faster than the budget for education, and twice as fast as outlays on health and hospitals.¹⁸ With the number of US Americans behind bars tripling between 1970 and 1990, the country now imprisons a larger share of its population than any other nation.¹⁹

Containing the NICs

The adjusting of America during the 1980s was driven by interests which trumpeted the virtues of the free market but in practice advanced the position of corporate monopolies. Many populists drawn to Reagan expected that the deregulation of the economy would mean the breaking up of monopolies; they found instead that it was a means of doing away with obstacles to corporate mergers and acquisitions.²⁰

The same opportunism was evident in foreign policy, where the object was to create a global playing field whose rules would favour “corporate America's” version of capitalism while smashing the opposition's. Letting the market weed out inefficient producers was a principle that was left by the wayside as Washington increased subsidies to US farmers and tightened quotas on imports of textiles and garments from the Newly Industrialized Countries (NICs) of the South — Korea, Hong Kong, Taiwan, Singapore, Malaysia and Thailand — in order to protect US cloth manufacturers.

Although one immediate goal of US policy was to eliminate the US trade deficit with the NICs, its ultimate purpose was to reduce the threat these countries posed to US economic interests by “rolling back” the state from the leading role it played in the high-speed growth of these economies. Although they had been extolled as free market showpieces, the NICs' success in fact

resulted not from the unfettered operation of the market but from “command capitalism” in which the state actively intervened in the economy to build up industry.²¹ Already facing a formidable challenge from Japan, the US was not keen to allow the emergence of East Asian competitors which were following the Japanese model of state-led capitalism. US industrial and agricultural interests thus combined to push for a monopoly-favouring economic policy under the deceptive rallying cry of “Free Trade.”

Trade Measures

Given the economic success of the NICs, the weapon of structural adjustment programmes — which had been used against over 70 Third World countries by 1993 — was not employed to bring the NICs into line. Instead trade policies were used. The experience of Korea — the NIC *par excellence* — typifies the approach.

The first salvo came in 1983, when the US Commerce Department backed additional duties on Korean television imports, following an anti-dumping suit filed by the US television industry. The use of anti-dumping measures was coupled with a tightening of “voluntary export restraints” — self-imposed quotas adopted by exporting countries under threat of retaliation from the importing country. Restrictive quotas placed on Korean textile imports under the Multi-Fibre Agreement reduced their rate of growth from 43 per cent per year in the 1970s to less than one per cent in the early 1980s. Similar restrictions on Korean steel imports limited them to less than two per cent of total steel imports into the US.

However, these measures did not prevent Korea's trade surplus with the US from reaching US\$9.5 billion in 1987. So the US threatened to place Korea on the “priority watch list” under the Super 301 section of the Omnibus Trade and Competitiveness Act of 1988, which requires the US President to take retaliatory action against those countries deemed to be employing unfair trade practices. Faced with this threat, Korea agreed in 1989 to liberalize its foreign investment regime by expanding the list of sectors open to foreign investment, simplifying investment approval procedures, and removing performance requirements.²² By January 1992, about 98 per cent of industrial areas and 62 per cent of service areas had been opened to foreign equity investment.²³

By the early 1990s, the US economic offensive had ballooned into an all-encompassing assault that targeted, among other sectors, telecommunications, maritime services, financial services, the fishing industry, cosmetics, government procurement practices and health inspection regulations, and agriculture (*see* Box, p.90). The offensive was successful: by 1991, South Korea's 1987 trade surplus with the United States had been turned into a deficit of \$335 million.

Two Sides of the Same Coin

Korea is not the only industrializing country to have been subjected to this treatment. Taiwan, Thailand, Indonesia, India, the Philippines and Brazil have all been targetted under different sections of the US Trade Act. Not even the poorest countries have remained exempt from punitive action from the United States: Papua New Guinea was subjected to anti-dumping

Dismantling Korean Agriculture

The US trade assault on Korea's agricultural sector has been little short of devastating. Throughout the 1960s and 1970s, the US had dumped food in Korea through programmes such as "Food for Peace", a system of subsidized exports tied to development programmes. Between 1973 and 1983, grain imports skyrocketed by almost 300 per cent. The lower prices triggered by these imports discouraged domestic production and dropped the self-sufficiency ratio between 1965 and 1983 from 27 per cent to 6 per cent for wheat, from 36 per cent to 2.7 per cent for corn, and from 100 per cent to 25.7 per cent for beans. As one analyst claims, "imports of wheat and cotton from the US have already resulted in the disappearance of Korean farms growing those crops."

In the mid-1980s, a massive agricultural surplus in the US (due in large part to production subsidies) led the US to pressure Korea to open up its agricultural market still further to US commodities. After reducing trade barriers to US cigarettes, the Korean government encouraged farmers to shift production to other crops, such as red peppers. But an almost 10 per cent increase in fields planted with peppers drastically lowered the market price, resulting in vast unsold stocks and bankruptcy for many farmers.

From tobacco, the US turned its attention to beef. Under pressure, the Korean government first allowed the import of 14,500 tons of beef to meet 10 per cent of domestic demand in 1988, then raised the quota to 50,000 tons in 1989 and 58,000 tons in 1990. Imports now account for 60 per cent of all beef consumed in Korea, yet

the US is pressing for a fixed increase in beef imports at the rate of 20 per cent of the previous year's imports between 1993 and 1997.

Rice is the ultimate prize of the US agricultural lobby. Given its central role in Korean agriculture, any significant opening of the rice market would lead to massive dislocation, since local rice cannot compete with imported rice which is from five to seven times cheaper. In the words of an open letter to President Bush in *Business Korea*:

"Because of our climate, most Korean farmers are engaged in rice cultivation, which takes place on more than 60 per cent of arable land, and provides more than 50 per cent of farm income. Rice is the life blood of Korean farmers. As one of the basic foodstuffs for the Korean people, rice is essential for food security, conservation of the land, and maintenance of rural society."

It is unlikely that such pleas will prevent the dismantling of Korean agriculture, for US trade negotiators know that Korean technocrats have designated agriculture as the sacrificial lamb in a defensive strategy whose overriding goal is to keep the US market open to Korean manufactured exports.

Korea is now the third largest importer of US agricultural products, with imports rising from \$1.8 billion in 1986 to \$5 billion by the end of 1991. On a per capita basis, Korea now consumes more US farm products than any other foreign nation. Half of Korea's total food imports and 60 per cent of its grain imports come from the United States.

harassment, while Burma, Fiji, and Bangladesh have seen their textile and garment exports to the US subjected to tight restrictions under the Multi-Fibre Agreement. World Bank economist Ann Krueger commented: "The recent spectacle of the United States imposing Multi-Fibre Arrangement restrictions on Bangladesh's exports to the United States was grossly inconsistent with the stated American concern for Bangladesh's development."²⁴

Actions like this led the United Nations Conference on Trade and Development (UNCTAD) to brand US trade strategy as "unilateralism" and "forced negotiation". If institutionalized, the agency warned, US unilateralism:

"would have very adverse consequences for developing countries, which do not have sufficient leverage to dissuade a powerful trading partner from such practices. Moreover, the rule of law in international trade would be unavoidably weakened, and the results that may emerge from the Uruguay Round would be inevitably compromised."²⁵

In the eyes of many developing countries, however, the present Uruguay Round of GATT will bring new areas of the international economy into a regulatory framework that favours Northern countries and may have crippling effects upon the South.²⁶ Unilateralism and GATT are two faces of the same process of resubordination directed at those countries which threaten to make the economic breakthrough to developed status — they reinforce a set of global economic practices which come under the rubric of "free trade" and which favour the continued dominance of the powerful nations, in particular the United

States. The drive to institutionalize these practices is designed to make other models of capitalist development illegitimate, particularly those in which the state spearheads the process of development. It aims, in fact, to make it very difficult for new Japans, new South Koreas, and new Taiwans to emerge from the South.

Bringing the South Back into Line

Indeed, resubordinating what is perceived as an increasingly threatening South has become a central plank of US foreign policy in the past two decades. Until the 1970s, US policy towards the Third World was largely determined by a broad strategy aimed at "containing" global communism. While force was seen as the decisive arbiter in this conflict, US policy makers were also convinced that the growth of Third World markets was in the interest of US capital and that armed counter-insurgency had to be accompanied by a degree of economic stability and prosperity.

By the late 1970s, however, the economic programme of the containment strategy began to be criticized because it was not providing the security for Western interests in the South that had been promised. Third World governments, including political allies of the US, influenced by local industrial interests and popular pressure, were clamouring for more economic power. At the Algiers non-aligned summit of 1973, the Group of 77, comprising the major Third World countries, demanded exten-



The White House, Washington

A summit meeting of leaders from North and South held at Cancun, Mexico in October 1981 was intended to launch a new stage in the North-South dialogue, but actually inaugurated a decade of debt and decline.

sive economic concessions from Western nations under the rubric of the New International Economic Order (NIEO). The Heritage Foundation, a US right-wing think-tank, warned:

“A key element of NIEO’s demands is financial redistribution: international taxation, increased foreign assistance, the right to expropriate private foreign assets, commodity price protection, and commercial preferences regarding shipping and trade generally. Technological redistribution, through mandatory transfer of industrial, seabed, space, and pharmaceutical technology has been another NIEO tenet.”²⁷

The Uppity South

These demands were soon followed by action. In Brazil, where foreign-owned firms accounted for half of total manufacturing sales,²⁸ the government moved in the late 1970s to reserve the strategic information sector to local industries, provoking bitter denunciation from IBM and other US computer firms.²⁹ In Mexico, the government proposed a programme for the pharmaceutical industry, comprising no-patent policies, promotion of generic medicines, local development of raw materials, price controls, discriminatory incentives for local firms, and controls on foreign investment, which provoked legal actions and threats of disinvestment from the powerful US drug industry.³⁰

But the main threat to Northern control was the Organization of Petroleum Exporting Companies (OPEC), the oil producer’s cartel, which twice — in 1973 and 1979 — hiked up the price of petrol to the oil-hungry industrial countries. To many in the United States, OPEC became the symbol of the South: an irresponsible gang, bent on using its monopoly to bring the West to its knees. Although OPEC was dominated by US allies such as Saudi Arabia, Kuwait and Venezuela, its “oil weapon” evoked more apprehension than the nuclear arms of the communist nations. The oil cartel was seen as the potential precursor of a unified Southern bloc controlling most strategic commodities.

“Cutting off the Dole”

By 1980, the North-South cleavage began to supersede the East-West divide in US consciousness. Many in the Reagan administration believed that the interests of the North were fundamentally antagonistic to those of the South, and that the task of the moment was to repair the damage through firm policies aimed at resubordinating the increasingly unmanageable Third World within a US-dominated world economic system.

A first blow in this campaign was the US decision to cut its contribution to the 1982 replenishment of the International Development Association (IDA) — the World Bank’s “soft loan” wing — by \$300 million. This example led other industrial countries to cut their own contributions, resulting in the agency’s receiving \$1 billion less than it originally expected. Since IDA loans are granted on concessionary terms to the poorest countries, the move was a signal from the Reaganites that the US and its allies were “cutting off the dole.” Henceforth IDA funds were increasingly to be allocated not to poor countries, but to those that were regarded as “making the greatest efforts to restructure their economies.”³¹

The moves to cut aid coincided with the 1982 debt crisis, when it became plain that a large number of Third World countries had no prospect of paying off the growing debt that they had contracted over previous decades.³²

The US Treasury Department’s solution — and the centrepiece of the “Baker Plan” which the Reagan administration proclaimed during the World Bank meeting in Seoul in 1985 — was to shift more of its resources from traditional project lending to “structural adjustment” lending. Structural Adjustment Loans (SALs) were immediate loans which could be used to relieve a country’s balance of payments deficit or to repay interest owed to private banks. To receive SALs from either the World Bank or the IMF, a government had to submit to a number of conditions ostensibly designed to make its economy more efficient and capable of sustained growth — radically reducing

government spending, cutting wages, liberalizing imports, removing restrictions on foreign investment, devaluing the local currency and privatizing state enterprises.³³

Blasting Open Markets

While World Bank economists tried to sell the SALs as necessary to promote efficiency and sustained growth, Third World leaders accurately perceived that they were designed to blast open Third World economies. The objective was to dismantle the mechanism that made the exercise of economic sovereignty possible and effective — the Third World state. In 1988, a survey of structural adjustment programmes carried out by the United Nations Commission for Africa concluded that their main objective was the “reduction/removal of direct state intervention in the productive and distributive sectors of the economy.”³⁴

Since the onset of structural adjustment lending in the early 1980s, the Third World’s overall debt burden has not lightened; its total external debt climbed to US\$1.3 trillion in 1992 from \$785 billion in 1982. What has changed is the composition of the debt load: a large portion of the Third World debt is now owed to official financial institutions such as the World Bank and the International Monetary Fund (IMF), whose loans carry structural adjustment conditions.

The South is still stagnating, and many in the South are convinced that the imposition of a state of permanent stagnation was the objective. “It may not be an exaggeration,” proclaimed the South Commission in 1990, “to suggest that the establish-

ment of a system of international economic relations in which the South’s second-class status would be institutionalized is an immediate danger.”³⁵

Dark Victory

A process of cultural disintegration has followed in the wake of structural adjustment. People fleeing devastation in the South to seek economic opportunities in the North are triggering anxieties that are readily exploited by right-wing ideologues seeking scapegoats, or by politicians attempting to deflect public attention from the structural causes of record unemployment and deepening inequalities. In the last two years, successive French governments have proposed chartering planes to haul unwanted immigrants back to their home countries, introduced measures to achieve “zero immigration” and debated plans to allow police identity checks based on race. In Germany, a dangerous interplay between political opportunism and popular anxieties has not only resulted in the weakening of the unconditional right of asylum adopted after the Second World War, but has also given the green light to murderous attacks on immigrants by neo-Nazi groups. In the United States, there has been a noticeable rise of racist and chauvinist rhetoric and activities.

Such racism has been given a more refined expression by French socialist Jacques Attali, the first chair of the European Bank for Reconstruction and Development, who writes off the billions of people in the South as “millennial losers.” Africa, he claims, is a “lost continent”, while Latin America is sliding into “terminal poverty.”³⁶ With no future of their own, says Attali, the peoples of the South can only look forward to “migrating from place to place looking for a few drops of what we have in Los Angeles, Berlin or Paris, which for them will be oases of hope, emerald cities of plenty and high-tech magic.”³⁷

What worries Attali is that the poor of the South:

“will redefine hope in fundamentalist terms altogether outside modernity. This dynamic threatens true world war of a new type . . . terrorism that can suddenly rip the vulnerable fabric of complex systems.”³⁸

One possible denouement of the North-South conflict, says Attali, is a “war unlike any other seen in modern times, [that] will resemble the barbarian raids of the seventh and eighth centuries.”³⁹

Attali’s image of protracted war with the South is similar to that outlined in a 1988 proposal by the US Presidential Commission on Long Term Strategy; this landmark document entitled “Discriminate Deterrence” began the process of moving the US defence establishment’s focus away from the Soviet Union towards the threat that was seen as emanating from the Third World. Such a war, warned the Commission, would take the form of “low-intensity conflict” — a form of warfare in which “the enemy” is more or less omnipresent and unlikely ever to surrender.⁴⁰

Saddam Hussein — the West’s erstwhile ally in the Middle East — was the leading candidate among those who could be demonized into the new enemy, but by 1992 the single most worrisome trend for US policy makers was said to be the “march of Islamic fundamentalism”⁴¹ or the conflict between the West and the “Islamic-Confucian Connection”.⁴² The distance separating this perspective from a policy of intervention in support of corrupt regimes threatened by fundamentalist Islamic movements is dangerously narrow. Even *The Economist* warns:

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"There is now a growing danger of the West falling into the dreary Cold War trap of keeping tinpot dictators in power because of the service they do in keeping undesirables down . . . To help them for no other reason than the actual or potential threat of an Islamic uprising is bad politics."⁴³

The root of this polarization between fundamentalism in the South and chauvinism in the North is the restructuring of the world economy to consolidate the hegemony of Northern, specifically US, corporate capital. It can be countered by promoting the common interests of the peoples of North and South in repelling corporate-driven structural adjustment. This will entail forging another international economic vision, one that brings the economy back under the control of the community and that fosters solidarity instead of the atomized yet centre-dependent existence idealized by market ideology.

There are growing numbers of organizations and communities throughout both the North and the South committed to such a vision. The question remains: can this movement mobilize fast enough to head off the dark victory of the "New World Order"?

This article is based on the authors' 1994 book *Dark Victory: The United States, Structural Adjustment and Global Poverty* available from Pluto Press, 345 Archway Road, London N6AA, UK, £9.95; Food First, 398 60th Street, Oakland, CA 94118, USA, \$12.95; and Third World Network, 87 Cantonment Road, Penang, MALAYSIA, \$9.00

References

- Iglesias, E., *Reflections on Economic Development: Toward a New Latin American Consensus*, Inter-American Development Bank, Washington, DC., 1992, p.103.
- Centre for Hunger, Poverty and Nutrition Policy, *Two Americas: Alternative Futures for Child Poverty in the US*, Medford, 1993, p.13.
- Marshall, R., "Labour in the Global Economy" in Hacker, S., and Hallock, M., (eds.), *Labour in a Global Economy*, University of Oregon Labour Education and Research Centre, Eugene, 1991, pp.12-13.
- Beberoglu, B., cited in Harrison, B. and Bluestone, B., *The Great U-Turn*, Basic Books, New York, 1988, p.27.
- Grunwald, J. and Flamm, K., *The Global Factory: Foreign Assembly in International Trade*, Brookings Institution, Washington DC., 1985, p.3.
- Choate, P., *Agents of Influence*, Alfred Knopf, New York, 1990, p.82.
- Faux, J. and Lee, T., "Implications of NAFTA for the United States: Investment, Jobs and Productivity" in Grinspun, R. and Cameron, M., (eds.), *The Political Economy of North American Free Trade*, St. Martin's Press, New York, 1993, p.240.
- Koechlin, T. and Larudee, M., cited in Faux, J. and Lee, T., op. cit. 7, p.244.
- Harrison, B. and Bluestone, B., op. cit. 4, p.92.
- Mishel, L. and Bernstein, J., *The State of Working America: 1992-1993*, Economic Policy Institute, Washington, DC., 1993, pp.3-4.
- Thurow, L., *Head to Head: The Coming Struggle among Japan, Europe and the United States*, William Morrow, New York, 1992, p.164; Mishel, L. and Bernstein, J., op. cit. 10, p.2.
- The Reagan administration introduced a number of highly regressive tax measures, almost unopposed. The Economic Recovery Tax Act of 1981, the Tax Equity and Fiscal Responsibility Act of 1982, and the Social Security Amendments of 1983 reduced personal taxes by US\$117 billion, benefiting the rich, but led to an increase of \$11 billion in social security taxes, the costs of which were borne by the whole workforce.
- Harrison, B. and Bluestone, B., op. cit. 4, p.163.
- Prowse, M., "America's Poor are Very Different", *The Financial Times*, 8 May 1992, p.12.
- Enriquez, P., "An Un-American Tragedy: Hunger and Economic Policy in the Reagan-Bush Era", *Food First Action Alert*, Summer 1992.
- Physicians Task Force on Hunger in America, cited in Enriquez, P., op. cit. 15., p.3; Phillips, K., *Boiling Point*, Random House, New York, 1993, p.175.
- Enriquez, P., op. cit. 15., p.2.
- Garten, J., *A Cold Peace: America, Japan, Germany and the Struggle for Supremacy*, Times Books, New York, 1992, p.203.
- Ibid.
- Harrison, B. and Bluestone, B., op. cit. 4, p.161.
- For an analysis of command capitalism, see Bello, W. and Rosenfeld, S., *Dragons in Distress: Asia's Miracle Economies in Crisis*, Penguin, London, 1991, pp.47-61.
- Office of the US Trade Representative, "1992 National Trade Estimates Report on Foreign Trade Barriers in Korea", Washington, DC., 1992.
- US Department of Commerce, "Korea Background — Key Issues", Washington DC., November 1992.
- Kreuger, A., "Free Trade is the Best Policy", in Lawrence, R. and Schulze, C., (eds.), *An American Trade Strategy: Options for the 1990s*, Brookings Institution, Washington, DC, 1990, p.76.
- United Nations Conference on Trade and Development (UNCTAD), *Trade and Development Report 1990*, United Nations, New York, 1990, p.89.
- See "Special Issue on GATT", *The Ecologist*, November/December 1990; "Cakes and caviar: GATT and Third World Agriculture", *The Ecologist*, November/December, 1993.
- Bandow, D., "The US Role in Promoting Third World Development" in *US Aid to the Developing World: A Free Market Agenda*, Heritage Foundation, Washington, DC, 1985, p.xxiii.
- Quoted in Nossiter, B., *The Global Struggle for More*, Harper and Row, New York, 1987, p.6.
- Moore Lappé, F., Schurman, R. and Danaher, K., *Betraying the National Interest*, Grove Press, New York, 1987, p.10.
- Peterson, W., "The Social Roots of Hunger and Overpopulation", *The Public Interest*, Summer 1982, p.68
- A. W. Clausen, quoted in Kolko, J., *Restructuring the World Economy*, Pantheon, New York, 1988, p.272.
- See "The Third World Credit Crisis", *The Ecologist*, Vol. 22, No. 5, p. 249.
- See: "India under IMF Rule", *The Ecologist*, Vol. 22, No. 6, p.271; and "Structural Adjustment in Costa Rica", *The Ecologist*, Vol. 23, No. 5, p.179.
- Cited in Cleary, S., "Towards a New Adjustment in Africa", in "Beyond Adjustment", a special issue of *African Environment*, Vol. 7, Nos. 1-4, 1990, p.357.
- South Commission, *The Challenge to the South*, Oxford University Press, New York, 1990, pp.72-3.
- Attali, J., *Millennium: Winners and Losers in the Coming World Order*, Times Books, New York, 1991, p.73.
- Ibid., p.76.
- Ibid., p.77.
- Ibid., p.15.
- Presidential Commission on Long-Term Integrated Strategy, *Discriminate Deterrence*, US Government Printing Office, Washington DC., 1988, p.15.
- Crossette, B., "US Aide Calls Muslim Militants Concern to the World", *New York Times*, 1 January 1992, p.3.
- Huntington, S., "The Clash of Civilizations", *Foreign Affairs*, Summer, 1993, pp.22-49.
- "Living with Islam", *The Economist*, 4 April 1992, p.11.

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If Wishes Were Horses

Desire and Democracy in the History of Transport

by

Wolfgang Sachs

The history of transport in modern Germany demonstrates how the desire to conquer distance has been confused with desires for social distinction. The automobile was originally promoted as a luxury commodity which, in contrast to the railway, conferred advantages of privacy, autonomy and prestige upon those who could afford it. However, as the number of cars on the roads has increased, these advantages have been superseded by congestion, compulsion and banality. The motor industry sees a way out of this dilemma through "intelligent highways" and toll roads. But the real solution lies in recognizing that people's perception of the value of distance has been distorted by wayward desires, and that there is fulfilment in the intimate, the slow and a social structure in which short journeys once again become meaningful.

"If wishes were horses, then beggars would ride."

English Nursery Rhyme

For those in the nineteenth century who were particular, travelling by railway imposed unwelcome demands. Before its arrival, the wealthy and privileged had enjoyed the privacy, the independence, the distinction and the relative speed of a carriage and horses staffed by a retinue of servants. But, to the embarrassment of the equestrian elite, the railway soon outpaced the horse. Technological progress forced the privileged to give up their horse-drawn carriage and subject themselves to public constraints.

Racing furiously for the train, losing their way in a cloud of smoke and noise as they sought directions to the correct car, fumbling the ticket out of their pocket for the surly conductor — all under the penetrating gaze of the common people: this was an affront to proper order. True, some salon railway carriages resembled a grand hotel on wheels, but the luxury of first class could not conceal that travellers from more refined circles forfeited sovereignty by using the train: they were inmates in a system of mass transit. The Countess Ida Hahn-Hahn was one of the first to voice misgivings about the new invention, in 1841:

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"I find it altogether unseemly for a person. Through train travel one is degraded into a bundle of goods, and forfeits the individual senses and independence . . . The steam locomotive aims only at levelling and centralizing — the two obsessions of those who call themselves liberal . . . All limits, sense of place, pleasures and needs are likewise levelled. For a pittance, old and young, fine and common, rich and poor, human and beast alike glide along behind a steam engine."¹

Masters of the Road — Again

For those who sensed their privilege was threatened, the invention of the motor car at the turn of the century was a godsend. Automobiles promised to resurrect the old independence of self-propelled vehicles, for they offered emancipation from the inconvenience of the railway: the regimentation of the timetable, the compulsion of the unwavering rails, and — not least — the perspiration of the crowd. The writer Otto Julius Bierbaum captured this spirit of nostalgic optimism in the first German language book devoted to an automobile trip:

"The meaning of the automobile is freedom, self-possession, self-discipline, and ease. In it the travelling coach is revived in all its poetic plenitude, but in a form endlessly enriched by the former's exquisite potential

for intensified and simultaneously expanded gratification."²

It also offered relief from the miseries of public transport:

"A blissful prospect, never to be plagued by the fear of missing the train. We will never have to cry for stewards, never have to count again and again, one, two, three, four — did he bring everything? My God, the hatbox! Is the umbrella there too? We will never run the risk of being locked in a compartment with insufferable people, where the windows cannot be opened even in oppressive heat if someone is along who suffers from a fear of travelling in trains."³

The automobile, Bierbaum concluded, "will grant to human beings their conquest over time and space by virtue of its speed of forward motion."

In fact, the automobile caused no immediate revolution in mobility, but it did in the dominant symbols of prestige. It was welcomed not only by aristocrats looking back to the golden age of the coach and horses, but also by a rising middle-class of entrepreneurs, doctors and lawyers who used the car to demonstrate their elevated social position. The bourgeoisie arrogated to itself the aristocratic symbolism of the private car, to lend emphasis and legitimacy to its claim to power in the dawning epoch. The masters of time and space demanded that they also be the new masters of the social order.

The Car-Free Republic of Graubünden

On 8 August 1900, after persistent complaints about bolted horses, peasants driven into roadside ditches and motor accidents, the council of the Swiss canton of Graubünden announced: "The driving of automobiles on all streets of the canton of Graubünden is prohibited".

Over the next 25 years, there were repeated attempts by hotel owners dependent on the tourist trade and others to reverse this decision. But the people of the canton refused to accept the inconvenience of passing cars or to pay for the damage they caused. They were also concerned about their railway:

"Transport vehicles . . . must not become competition to the long-suffering Rhätische railway. The transport of goods by automobile instead of by railway reduces the railway's receipts. Is the citizenry to make up the reduced receipts for the railway through taxes?"

However, in 1910 the proponents of the motor car, supported by outside interests and central government, called for a referendum on the issue. The heated debate that ensued was described by one newspaper in these terms:

"Two fronts have formed in the struggle: the will of the people and the will of the government. The people do not want the automobile; the government, or a part of it, wants to admit it under whatever conditions necessary."

A local poet, on the eve of the referendum, put it slightly differently:

"Whether master's lust or peasants' right
Will o'er us all exert its might
Tomorrow will be decided."

It was decided by an impressive majority: 11,977 voted for the prohibition on automobiles, 3,453 voted against.

Over the next 15 years there were several more referenda, but the majority remained adamant that it preferred life without cars, although the prohibition became somewhat eroded by the issuing of special exemption permits. It was only in 1922, when the central administration in Bern intervened and ordered the opening of streets to through traffic, that resistance waned, and in 1925 the prohibition was repealed by a scant majority of 11,318 to 10,271.

Source: Maissen, F., *Der Kampf um das Automobil in Graubünden 1900-1925*, Automobilclub der Schweiz, 1968.

Who Owns the Road?

The aspiring conquerors of time and space, however, had first to contend with the wrath of the people. As pleasant as Herr Bierbaum's automobile trip may have been, he was not quite as well-protected from the lower orders as he might have hoped:

"Never in my life have I been cursed at so frequently as on my automobile trip in the year 1902. Every German dialect from Berlin through Dresden, Vienna and Munich to Bolzano was represented, as well as all the idioms of the Italian language . . . not to mention all the wordless curses: shaking fists, stuck-out tongues, bared behinds, and other besides."⁴

Indeed curses and shaking fists, flying stones, journalistic libel and attempted acts of parliament were to accompany the motorcar on its course all the way through the first decade of this century. The reason was simple. Automobiles needed streets; but the streets were already inhabited by pedestrians, horse-drawn conveyances of various types, children at play and all kinds of beast and fowl. The problems for villagers of shying horses, squashed poultry and terrified children, not to mention the din and stink, were compounded by the ease with which the motorized offender could drive away: "What a dust storm we stirred up leaving Italy!" sniggered the young Rudolph Diesel in 1906.

"We outraged the pedestrians with a gas attack — their faces pulled into a single grimace — and we left them behind in a world without definition, in which the fields and the trees in the distance had lost all colour to a dry layer of powder."⁵

No wonder, given this self-righteous arrogance, that people's tempers flared, the more so since it was they who had to pay for damage to their streets and commons. Little wonder, too, that the rage blended with class hatred, for those who raced along the country and village streets, who drove speedily off leaving the peasants with the mess, were *nouveaux riches* from the cities.

The rights of pedestrians were not only articulated by the shaking of fists. In 1912, Dr Michael Freiherr von Pidoll of Vienna published a *Call to Protest* in which he claimed for the public in general a right to the street:

"Automobile traffic in its present-day form involves, as we have seen, the constant endangerment, disruption and mobilization of passers-by or other vehicles, as well as a severe infringement on those community relations that correspond to an advanced culture. It is legally and actually incompatible with the rights of common use of nonmotorists, the great majority of the population."⁶

The growing automobile press responded that the pedestrian public was to blame. "The majority of accidents occur pre-

cisely because other types of street traffic are altogether unwilling to accept the new conditions brought about by the introduction of the motorcar and to conform to them," argued a writer in the *Allgemeine Automobil-Zeitung* in 1908. The following year, the same journal prescribed for pedestrians the deferential behaviour towards the motor-car that was later to be tabulated in Highway Codes and promoted in pedestrian safety campaigns throughout Europe:

"It must become habitually ingrained in the entire population to use the roads as little as possible wherever sidewalks are available, to look left and right upon entering the road, to walk and drive only on the right, even when the whole street is empty, and not to stand around in the street. A certain amount of traffic education for the population is urgently needed."⁷

Dr von Pidoll's riposte to such calls is as relevant today as it was in 1912:

"The alleged 'street incompetence' of the public dates only from the rise of automobilism. Does this mean that the entire population has been enlisted in the service of the latter? Where does the motorist get the right 'to master' — as he boasts — the street? It in no way belongs to him, but to the population as a whole. Whence his right to hound the people's footsteps and dictate to them a behaviour that he is justified in demanding only on his own private

paths? The public street is not meant for express traffic; it belongs to the milieu of the city . . . Should, perhaps, the public streets be kept 'free of people'?"⁸

Cars for the Few — Cars for the Many?

By the 1920s, however, the automobile had won a permanent place in desire; its mechanical beauty seemed to be a vision of the future. It was still true that the pedestrian got only dust and noise from the automobile, but for many the fascination it inspired began to outweigh the irritation. The grapes no longer hung too high for the spectators; they, too, wanted to become actors in the drama. Why should not the motor-car become cheap enough for everyone?

The automobile magazines were dangling visions of a new commonwealth: "The day will come — more quickly than we think — when everyone will have a place beneath the house in the garage."⁹ And the unions were lapping up these visions:

"The motor vehicle, that fun-filled, purring and devilishly fast factory on wheels, has changed our entire public and social life in a few short decades; it has made people more mobile, distances shorter, usable land more extensive, besides having wrought a powerful transformation on the technical organization of work methods. Now the transformation will continue in Europe, notably in the area of wage policy. And this will, in turn, foster an increase in the income of the masses and their social advance . . . The revolutionary automobile will serve the cause of the revolutionary working class."¹⁰

As popular expectations increased the primacy of the motor car started to gain public acceptance. It began to seem that cities and countryside should yield to roads built for speed. In the late twenties, the first images of a spatial order defined by traffic start to appear. H. Kluge, in his inaugural speech as rector of the University of Karlsruhe in 1928, demanded priority for automobiles in the German states:

"Right of way in the literal sense must be introduced, with neither cities nor rural areas falling behind in development relative to others. The large cities, and even the middle-sized cities, will sooner or later have to undertake street reconstruction, open up thoroughfares, build over- and underpasses."¹¹

No sooner was right of way for the motorist accepted than a new vision appeared. Traffic would pulse through space from border to border unhindered by bottlenecks, and the most distant nook could be connected to the "circulatory system" of national life. The bright strips of highway, running like "arteries" through the body of the nation, would bind north and south, east and west in the common circulation of information and commodities.

French architect Le Corbusier achieved the appropriate perspective of this new order as he looked down from an airplane on the chaos of streets in São Paulo:

"What if we construct a horizontal connection from hill to hill, from summit to summit, with a second connection to service the other major points? These horizontal connectors, running at right angles to each other, will be the great approaches and thoroughfares of the city. You will not fly over the city in your cars, but 'roll over' it. These freeways that I propose to you are gigantic viaducts."¹²

The people's car and the freeway — the two pillars of a society on wheels — had already been conceived of by the beginning of the 1930s, and the ideas pressed for realization. They were, in fact, soon to arrive, but not under the banner of democracy.

Pillars of the Reich

On 23 September 1933, shortly after he had come to power, Adolf Hitler, in his brightly polished knee boots, climbed to the top of a small hill and began shoveling like the devil. The "groundbreaking" ceremony for this construction project, unprecedented in scale, was masterfully staged. "No symbolic groundbreaking, that was real work in the dirt," the National Socialist periodical *Die Straße* (The Road) reported, noting "the first beads of sweat" on the Führer's forehead. All the radios in the country carried Hitler's call: "Begin! German workers to the job!"

Within a year, 90,000 workers and engineers had begun work on the massive highway construction project that would stimulate automobile production and boost the German economy. Nearly a million jobs (of which some 120,000 were linked directly to automobile production) can be traced to impulses initiated by Hitler's motorization policy.

It was a programme that appealed directly to popular aspirations. "As long as the automobile remains a means of transport for especially privileged circles," Hitler declared at the 1934 Berlin Automobile Show:

"it is with a bitter feeling that millions of obedient, diligent and able fellows, who in any case live lives of limited opportunities, know themselves to be denied a mode of transportation that would open for them, especially on Sundays and holidays, a source of unknown, joyous happiness . . . The class-emphasizing and therefore socially divisive character that has been attached to the automobile must be removed; the car must not remain an object of luxury but must become an object of use!"¹³

The car chosen to bring motorized mobility to the masses was named the *Volkswagen*, "the People's Car". But besides this demagoguery, there were other motives behind the Nazi strategy. Under the title "National Highways — the Sign of Our Times," the following appeared in the pages of *Die Straße*:

"The contradiction that existed between the technical development of the motor and the very limited realities of the street — a result of insufficient attention in previous decades — is now being cast aside. The roads of the Führer will be developed into great traffic arteries, which not only will contribute to the melding of the German people into a stronger political and economic unit, but will also put an end to the last remnants of particularistic thinking."¹⁴

The establishment of "One People, One Reich, One Führer" would not come about by itself: out-of-the-way places and resisting groups such as the unions had to be forced into unity. The erasure of stubborn differences was supposed to be effected by "eliminating opposition," and the highways were the spatial expression of this venture. The vision of a homogeneous society in which the pulse of life beats to a uniform rhythm, unopposed by local consciousness or cultural particularity, was to be set in the concrete of the national highway network.

This vision was (and is) modern in the highest degree, and one should not be fooled by the rhetoric of "blood and soil." The fascists simply gave a national socialist interpretation to a process that was emulated elsewhere under the name of the "market" or the "plan".

Republic on Wheels

By the 1950s, the dark times of the Second World War were past, but privation was still fresh in the memory, and a whole people proved nearly unanimous in its deep resolve to begin life anew. "Freedom calls, freedom presses!" wrote *Das Auto* in 1950.

"Can anyone hold it against people if they, who have waited eleven years for this moment, can, on a wonderful spring morning, get the car out of the garage, pack it full, and then charge off in it? With what desire and what wanderlust this moment has been envisioned during the past eleven years."¹⁵

The automobile was a powerful symbol: "We did it!" cried a couple featured in an advertisement for Ford Taunus:

"The new car is in the drive. All the neighbours are peering out of their windows and can see that we're preparing for a little weekend excursion. Yes, sir, we've done something for ourselves, we want something from life. After all, that's why we're both working, my husband in the plant and I as a secretary for my old company."

From 1960 to 1973, the number of private automobiles in Germany quadrupled, the number of kilometres driven tripled, and the total extent of freeways doubled. Historic sections of cities were bisected by thoroughfares, freeway interchanges cut into forests, and, whether on vacation to Spain or down the street to buy some cigarettes, people took to their cars under the careful watch of traffic reporters and emergency helicopters. The wheeled society was launched.

Hell is Other Drivers

However, a cloud was on the horizon. Once it had been chickens, horse-drawn carriages and potholes that irritated drivers; now a new obstacle was filling the streets: other drivers. Motorization was



"A day's production at Opel" heralds an advertisement in a 1925 edition of the magazine *Elegante Welt* (*Elegant World*). In the 1920s, however, it was the Ford Model T in the United States and the French "Citron" that were the leading, mass produced models. It was not until the 1930s that the German automobile industry began to thrive in both design and economic terms.

surging, but it came to a stop in traffic jams: "overfilled streets" and "clogged cities" threatened to make a nonsense of the newly-won freedom.

The automobile delivered the power to overcome distances, but not the space in which to exercise that power. The roads therefore had to be widened to accommodate the growing numbers of cars. Motorists clamoured for access to more intimate spaces, more parking places in the city, further integration of the provinces and bypasses for through traffic.

The flood of motor cars demanded a radical programme of redevelopment. Main thoroughfares were made into multi-lane streets, or supplemented with tunnels and overpasses. Radial streets were built through the suburbs, connecting the service centre of the city with the employees and consumers on the outskirts, while tangential streets were constructed through the areas bordering on the inner city to distribute incoming traffic over a larger area. Protected areas for pedestri-

ans, discrete paths for bicycles, separate railways for streetcars, also had to be built. Traffic management became the hub of planning policy. Yet after 50 years of traffic management, the problem of congestion is worse than ever.

The Ageing of Desire

The joy of driving rests to a great degree on relative advantages — that is, on advantages that others do not enjoy because they do not possess an automobile and are therefore relatively immobile and slow. With mass motorization, the picture has changed, and the relative advantages the automobile once conferred have dwindled. Now the masters of space and time are many and they are held captive by clogged streets, their cars hinder other cars, their desires get in the way of other desires. In a kind of counter-productive collaboration, although each individual acts rationally, all of them together act irrationally. Privilege evaporates in this mutual blockade, with disillusion spreading in its place.

In 1960, a survey found that 63 per cent of car owners derived great pleasure from driving. In a similar survey, 21 years later only 41 per cent could make the same claim. Of the remainder, a large number indicated that they were on the road because they had to be. For many, it seems, the enthusiasm has gone flat, the dictate of necessity has pressed to the fore, the automobile has changed from an article of pleasure to an enforced article of utility — even if it still presents an illusion of "choice":

"When the milkman no longer comes to the door, it is a dirty trick to portray the possibility of going oneself to fetch the milk as desirable mobility. And the freedom to choose any conceivable mobility in the exercise of a profession only means that, rather than moving on the labour market, one is instead moved by it, and in the most dreadful way. The supermarket in an open field far from the city first

became possible through private motorization; if it did not exist, we would be supplied by private grocers, who are now in agony on account of motorized competition. And so on. The possibility of transportation has become the necessity of transportation."¹⁶

What began as a grandiose advance toward liberation has ended in a finely woven net of dependencies.

Standing in the Shadows

In fact, disenchantment set in long before the motor car became fully democratized. Although by 1979, 61.8 per cent of all households had a car in the garage, many households consisting of single persons or elderly individuals or those earning little income have no horsepower at their disposal. Even in motorized households, not every family member manages to get behind the wheel; children and teenagers are excluded first of all, and not every adult has a driver's license. Moreover, men dominate in the world of the motor car. In 1991, only 18.3 per cent of all German men had no driver's licence, as

opposed to 48.5 per cent of women.¹⁷ Those who reap the benefits of acceleration are predominantly employed, 25 to 60-year old men.

While the motorization wave has substantially overcome class inequalities in car ownership, it nevertheless reinforces a new type of inequality — between members of society regarded as productive and those considered unproductive. Motorized power over space is now distributed according to one's proximity to the money-generating production process. Those who do not work in the service of output must move more slowly. In the myth of the automotive society, those moving in the bright lights of the growth economy are taken to represent society as a whole. No one sees those standing in the shadows.

Intelligent Highways

If it is accepted that the transportation-driven industrial economy is inviolable, and that transit-intensive living conditions are unchangeable, then there remains only one route out of the traffic growth dilemma: through the develop-

ment of better automobiles and better traffic flow.

Since the early 1980s, the automotive industry has come to the rescue of ageing desires by taking on board the aspirations of those who question the value of full motorization. On the agenda now is not the expansion of force, but its clever utilization: the future lies in the silicon chip which portends a new age of efficiency with less poison, less waste and less congestion.

Computerized navigational systems, such as that presently being researched in Europe by the \$800 million PROMETHEUS programme, can scan traffic conditions over a broad area, process the information into a strategy and then relay commands back to traffic signals and on-board navigational devices. The cost of easing congestion in the United States by building "smart cars" to run on "smart highways" is estimated to be more than \$200 billion dollars. Beyond PROMETHEUS lie more sophisticated gadgets such as on-board heat sensors that detect the presence of a living being in the path of the car and cause it to brake automatically.¹⁸

The irony of these solutions lies in the fact that much of what remains of the freedom and autonomy experienced by the early champions of the motor car will be ceded to the computer. Speed, performance and route will progressively become the prerogative of PROMETHEUS's "on-board systems to take over various driver functions."¹⁹ Eventually, the engineers predict, "one can envision an automated highway with platoons of vehicles running almost bumper to bumper at high speeds."²⁰ In other words, the motor-car will drive itself — it will become an auto-mobile in the true sense of the word — while the driver will revert to passenger. How, one wonders, would Countess Ida Hahn-Hahn take to being transported like "a bundle of goods" upon a computerized superhighway, could she be projected into the 21st century?

First Class Roads

But although the sense of independence enjoyed by the early motoring pioneers may be irretrievable, an agenda is being pursued that aims to revive some of the glamour and prestige of motoring by eliminating, for some, the drudgery of democracy.

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"At present a congested road is rationed among would-be travellers in the least efficient way known to economics — by queuing," wrote *The Economist* in 1992. "Rationing by price would work much better."²¹ In the ensuing year both the German and the British governments announced the introduction of a toll system of motorways. Computer-monitored toll roads will once again place mobility in the hands of a privileged elite. It may soon be not the speed and power of internal combustion engines that is limited to a privileged minority, but the space in which to exercise them.

Twenty-four years ago, horsepower could still buy privilege. In 1970, an advertisement for the Citroën DS announced:

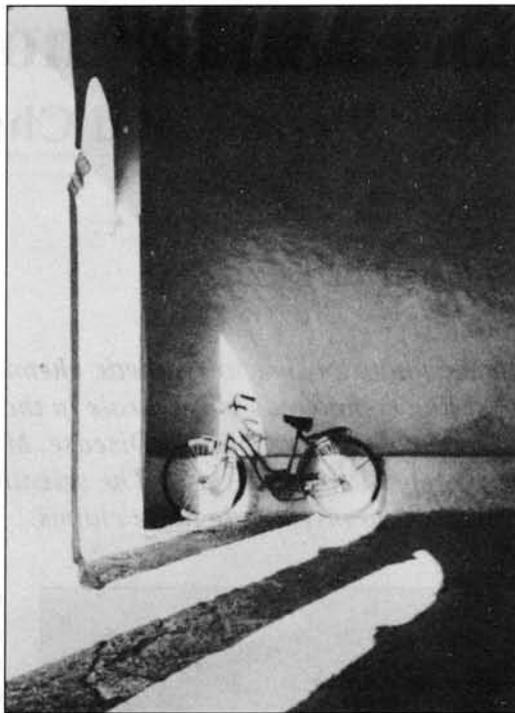
"At 140 kilometres per hour the DS regains its distinction; at 140 kilometres per hour everything begins to return to its proper order. The fast lane is once again reserved for the DS, leaving others to look on as it quietly but inexorably pulls away."

But today, 140 kilometres per hour is standard cruising speed for most modern motor cars. Access to the "fast lane" of the computerized toll roads of the future will not depend on horsepower, but will instead be sold to the highest bidders.

Less Is More

These solutions do not resolve the dilemma caused by an apparent conflict between desire and democracy. Nor does the way out of this dilemma lie simply in investing in more and better public transport, for this too is not the stuff of dreams. The argument between those who champion the private automobile and those favouring public transit is over the superior path into the same imprisonment. The traditional leftist utopia of publicly organized transit (preferably free-of-charge) would indeed be more democratic, but it would result in a sort of democratic despotism: all would be equal in their dependence on a transit system.

Instead, the solution should be sought in a clever limitation on technological excess and in particular on speed. Today's fleet of automobiles is grotesquely overpowered, with acceleration capabilities and top speeds more suitable for



The showpiece technology of a low-speed society remains the bicycle. It invites one to take possession of the world near-at-hand, it transforms the immediate vicinity into a home, with habitable streets, shops and businesses around the corner, and space for something more than simply roads and car-parks.

racing cars. Quite apart from the wasted energy and materials involved, such top-notch technology offers no protection from the environmental crisis of the second order — the erosion of nearby spaces that beckon one to a non-motorized life-style.

If distances grow as it becomes possible to travel faster, why should distances not shrink again once people start travelling more slowly? A low-speed society would suggest the desirability of shorter routes and redistribute goods and services so as to facilitate the development of a lifestyle centred on short journeys.

This does not mean that the automobile should be thrown onto the scrap heap of history but that a reformed traffic technology should be developed. Cars should not be speed machines for power mongers, but modest vehicles for relaxed people, with speed governors built into the engines. Roads should not be improved to the point that an arsenal of speed limits, radar traps, and police cars becomes necessary, but should by their design calm and mitigate traffic.

Low-speed technology would foster a locally-centred economy that no longer idealizes access to the distant, but values the density of nearby exchanges that increase independence — an economic

structure devoted to detail and nuance, rather than long-distance homogeneity.

Such a society does not need to rush headlong into the future, for it is not driven by the fear that it will miss something. In a culture of calm composure, aggressive or triumphant drivers make a ridiculous impression, because they betray to watching eyes their feeling of being pursued by a deficit. Nineteenth-century society was driven to haste through its fear of backwardness; a self-confident society of the twenty-first century will once again be able to afford slower speeds.

This article is drawn from *For Love of the Automobile: Looking Back into the History of our Desires* by Wolfgang Sachs, University of California Press, 1992.

References

1. Quoted in Riedel, M., "Vom Biedermeier zum Maschinenzeitalter. Zur Kulturgeschichte der ersten Eisenbahnen in Deutschland", (From early Victorian times to the machine age: On the cultural history of the first railroads in Germany), *Archiv für Kulturgeschichte* 43, 1961, p.119.
2. Bierbaum, O. J., *Eine empfindsame Reise im Automobil. Von Berlin nach Sorrent und zurück an den Rhein* (A sentimental journey by automobile: From Berlin to Sorrento and back to the Rhine), Munich, 1903, pp.268ff.
3. Ibid., p.269.
4. Ibid., p.285.
5. Diesel, E., *Autoreise 1905* (Automobile trip 1905), Leipzig 1941, pp.190ff.
6. Freiherr von Pidoll, M., *Der heutige Automobilismus. Ein Protest und Weckruf* (Automobilism today: A call to protest), Vienna, 1912, pp.36ff.
7. *Allgemeine Automobil-Zeitung*, No. 5, 1906, p.74; see also *Allgemeine Automobil-Zeitung* No. 11, 1908, p.39.
8. Freiherr von Pidoll, M., op. cit. 6.
9. *Automobil-Revue*, No. 7, 1923, p.126.
10. *Metallarbeiter* (Metalworker), No. 10, 1930.
11. Kluge, H., *Kraftwagen und Kraftverkehr. Kritische Bemerkungen über die bisherige und zukünftige Entwicklung des Kraftwagens und des Kraftverkehrs* (Power vehicles and traffic: Critical remarks on the past and future development of power vehicles and traffic) Karlsruhe, 1928, p.30.
12. Le Corbusier, *Précisions sur un état présent de l'architecture et de l'urbanisme* (Details on the present state of architecture and town planning) Editions Vincent, Paris, 1960, pp.240, 242.
13. *Völkischer Beobachter*, 9 March 1934.
14. *Die Straße*, No. 1, 1936, pp.8ff.
15. *Das Auto* 9, 1950, p.289.
16. Dahl, J., *Die Zeit*, No. 46, 1973.
17. Spitzner, M., *Approaches to Reducing Traffic Volume*, Wuppertal Institute, 1993.
18. Ben-Akiva, M. et al., "The Case for Smart Highways", *Technology Review*, July 1992.
19. ERT, *The Efficient Use of Energy*, European Round Table of Industrialists, 1992.
20. Ben-Akiva, M. et al., op. cit. 18.
21. *The Economist*, "The Case for Central Planning", 12 September 1992.

Anecdote and Orthodoxy

Degenerative Nervous Diseases and Chemical Pollution

by

Mark Purdey

There is considerable evidence that exposure to synthetic chemicals including solvents, organophosphates and pyridine compounds plays a role in the growing incidence of degenerative nervous disorders such as Parkinson's Disease, Multiple Sclerosis, Motor Neurone Disease and Myalgic Encephalomyelitis (ME). The scientific community, however, is reluctant to investigate these claims.

Long before the scientific community realized the importance of vitamin C, a sailor with a fetish for limes noticed that he was the only person on his ship to escape the notorious seafarer's disease, scurvy. He drew the obvious conclusion: that eating fresh fruit prevents scurvy. Yet it took 250 years before the medical and naval establishment accepted the sailor's "anecdotal" evidence and recommended that passengers and crew eat fresh fruit whilst at sea. In the meantime, countless numbers of people died of an easily preventable disease.¹

The medical establishment still exhibits a reluctance to look into "anecdotal" evidence. Although a growing number of people suffering from neurodegenerative diseases have now produced plausible evidence linking their condition to exposure to synthetic chemicals, that evidence has almost invariably met with condescension or outright dismissal by mainstream medical experts.² Yet the circumstantial evidence for a link is now so strong — and increasingly has the backing of corroborating evidence from laboratory studies — that the case for a thorough investigation is overwhelming.



Jean Ashford attributes her Multiple Sclerosis to exposure to an accidental discharge of crop spray.

the rate at which the nerve cells are excited increases, resulting in an influx of abnormally high and thus toxic amounts of calcium into the cells as well as the breakdown of the axonal transport systems which mobilize nutrients for nerve cell metabolism.

The diseases also differ in the particular area of the nervous system which is damaged. In Parkinson's disease, for example, damage is confined to nerve cells in the *substantia nigra* area of the brain; in MND, the motor neurones, the nerve cells stemming from the lower spinal tract and the brain stem, are affected; whilst with MS, the myelin protein that acts as a protective sheath around nerve cells in the brain is attacked.

As the diseases take hold, their symptoms become more and more acute: a slight shakiness of the hand becomes a permanent, uncontrollable tremor; a dull numbness in a leg muscle spreads until

the entire body is paralysed; a slurred sentence or two heralds an eventual loss of speech. Some of the symptoms, however, are so similar that diagnosis is often confused, especially at the onset of the condition.

When the Body Falls Apart

Degenerative nervous diseases are on the increase throughout the West, but four types in particular have been linked by sufferers to exposure to chemicals: Parkinson's Disease, Motor Neurone Disease (MND), Multiple Sclerosis (MS) and Myalgic Encephalomyelitis (ME). All seem to share the same basic disease process, each condition expressing a different genetic response to exposures to different classes and dose rates of chemicals. Parkinson's, MND and MS involve the progressive breakdown of specific parts of the central nervous system, with resulting loss of control over bodily functions, behaviour and movement, although they differ in the biochemical mechanisms involved. At the onset of Parkinson's and MND, for example,

Innocent Bystanders

Bertrand and Jean Ashford from Devon have no doubts as to why they are now both permanently crippled through Motor Neurone Disease and Multiple Sclerosis respectively. They date their problems to May 1984 when a helicopter spraying farmland overflowed the headland of a field and accidentally discharged a jet of chemical vapour over nearby houses. Residents who were in their gardens at the time reported "stinging" and "jumping" pains on all skin surfaces exposed to the mist droplets of the spray. "We were left gasping for air," said one, "temporarily blinded, our throats as though on fire, and instantly nauseated by the vile chemical taste that seemed to invade every corner of our bodies and homes". Birds fell dead out of the skies and pets went into convulsions or coma, often dying because of

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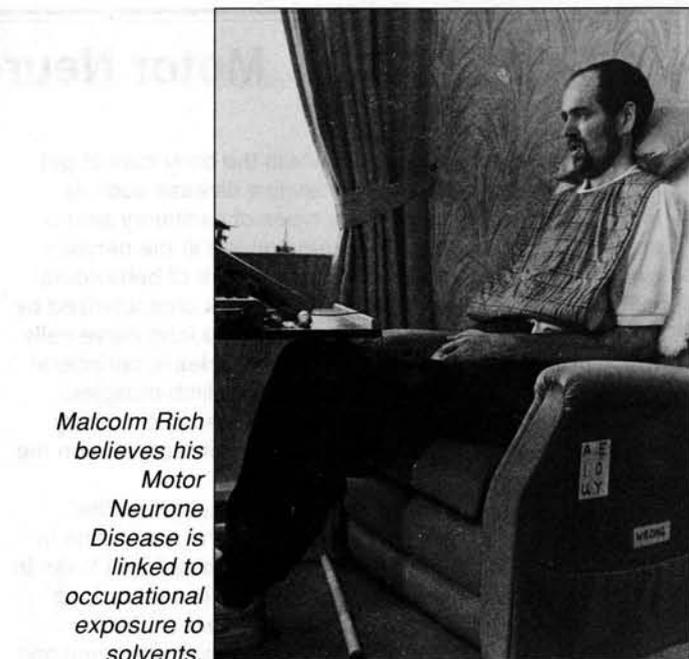
paralysis of the diaphragm. In many garden ponds, all the goldfish perished.

Bertrand Ashford, a retired chemist, was indoors at the time of the incident, but still breathed in the vapour. He has since been diagnosed as suffering from the bulbar palsy type of MND. Jean Ashford, a retired nurse, was out-of-doors and has been more severely affected; she has developed a progressive neurodegenerative condition involving symptoms of fatigue, loss of balance, gastro-intestinal cramps, loss of bladder sphincter control, loss of muscle strength, twitching, cramps, tremor, respiratory problems, headaches, speech difficulties, intermittent dyslexia, insomnia, anorexia, loss of temperature regulation, depression, and blurred vision progressing into double vision when fatigued. She is confined for the rest of her life to crutches and a battery car, and has lost the sight of one eye due to degeneration of the optic nerve. Her specialist diagnosed "provisional multiple sclerosis" together with "optic neuritis", which is so frequently associated with multiple sclerosis (MS) that it is generally considered part of the same syndrome.³

Exposed at Work

Like the Ashfords, Malcolm Rich, who, at the age of 32, is dying of amyotrophic lateral sclerosis (ALS), the commonest form of Motor Neurone Disease, firmly believes that his disease resulted from exposure to chemicals.

A former worker at a cellophane manufacturing plant in Somerset, Malcolm had lost his power of speech entirely when I interviewed him in 1992. Tapping out his answers through his computerized voice box, he attributed his Motor Neurone Disease to continuous occupational involvement with carbon disulphide, a solvent used in the cellophane-making process and



Malcolm Rich believes his Motor Neurone Disease is linked to occupational exposure to solvents.

Lesley Thomas

long recognized as a nerve poison. He mentioned one incident when carbon disulphide poured down his neck after the piping that conveyed the solvent over his work bench sprung a leak. He also said that three of his ex-workmates at the plant had died or were dying of MND, one of them the plumber in charge of this piping.

With MND in Britain running at a national incidence rate of one person in every 5,000,⁴ four known cases out of a total factory staff of 400 represents a huge increase in MND incidence over national averages.⁵

Multiple Sclerosis

Multiple Sclerosis is an inflammatory degeneration of the central nervous system which occurs when the body's immune system mistakenly regards the protective myelin sheath surrounding nerve cells in the brain as "foreign" and launches an assault against it.⁶

Fat-soluble types of organophosphates (OPs) can evoke conditions associated with MS by crossing the blood-brain barrier and affecting astrocytes and other specialized cells in the brain.⁷ Astrocytes act as "gatekeepers" to the brain, regulating the transfer of nutrients across the blood-brain barrier and maintaining the general homeostasis of the central nervous system.⁸ By causing the proliferation and hypertrophy of astrocytes, organophosphates increase the permeability of the blood-brain barrier, permitting large molecules which are alien to the central nervous system, such as proteins, viruses and other pollutants, to leak across and invade the brain. Many pollutants are attracted to the fatty regions of the brain, particularly to the myelin protein sheath around nerve cells, to which they become attached.

At the same time, OPs and solvent chemicals appear to switch the brain on to a state of immunological "high alert" by disrupting the supply of serotonin, a nerve transmitter that mediates many aspects of the body's immune system.⁹ The over-sensitized immune response system then perceives the abnormally-large molecules of myelin

coupled to chemicals as foreign bodies and attacks them, leaving nerves grossly demyelinated and unable to transmit nerve impulses effectively.

OPs have also been shown to inactivate various detoxifying enzyme systems¹⁰ whose activities are also typically found to be reduced in MS sufferers.¹¹

Myalgic Encephalomyelitis (ME) displays many biochemical and immunological similarities to MS, the majority resulting from a disruption in the supply of serotonin. As serotonin levels fall, so the output of the immune mediator, interleukin-2, rises, causing the loss of T-cells and a corresponding lack of resistance to infections, leading to lethargy and other symptoms associated with the disorder. However, the severe auto-immune reaction to myelin protein characteristic of MS is usually absent in ME. Genetic factors may play a part in whether or not an individual succumbs to ME or MS in response to toxic poisoning. It is noteworthy, for example, that many people who prove susceptible to ME also carry the gene for Gilbert's disease, a condition in which the capacity of the liver to produce the glucuronyl transferase enzyme,¹² needed to degrade some types of OP and other chemicals, is impaired.¹³ Viruses identified in both ME and MS sufferers are probably not causal factors in these diseases but simply opportunistic invaders of a body rendered less able to defend itself.

Motor Neurone Disease

An accumulation of chemicals which the body cannot get rid of can initiate a neurodegenerative disease such as Motor Neurone Disease. Many types of excitatory amino acids and monamine transmitters operate in the nervous system as mediators in a complex network of behavioural and nerve response mechanisms. MND is characterized by the destruction of the motor neurones, the long nerve cells which propel impulses for operating muscles in peripheral zones such as the diaphragm, heart and limb muscles. This destruction occurs when certain types of excitatory amino acids cause excessive excitation of receptors on the membranes of the motor neurones.¹⁴

This disrupts the biochemical homeostasis and the permeability gradients operating across the membrane in such a way that the nerve cell loses thiamine¹⁵ and takes in an abnormally high amount of calcium.¹⁶ The loss of the thiamine and the excessive level of calcium cause the cell's vacuole (a small liquid-containing cavity) to swell and the neurofilaments/microtubules (the intracellular structures which convey nutrients along the nerve cells) to degenerate,¹⁷ ultimately causing the cell's death. Glutamate is considered to be an "excitatory" amino acid that specifically underlies the "burn out" of motor neurones in the amyotrophic lateral sclerosis (ALS) type of MND.¹⁸

The progression of neurodegenerative diseases such as MND can be slowed down or blocked by treatment with substances to counter the overactivity of these excitatories, such as magnesium¹⁹ or the synthetic riluzole.²⁰

MND can also be triggered by other biochemical avenues. Some researchers have reported fundamental abnormalities in the activities of the cholinesterase enzyme which regulates the amount of acetylcholine transmitter that fires off the motor neurone impulse,²¹ as well as abnormalities in the metabolic pathways more directly related to glutamate, such as reduced activity of glutamate dehydrogenase, the enzyme which degrades glutamate.²² An oversupply of both the acetylcholine transmitter and glutamate excitatory will lead to the death of all the specific motor neurones that they mediate.

However, MND induced by exposure to synthetic solvents or to OPs is probably initiated via slightly different biochemical avenues, although the end result — death of the motor neurones — is the same as in those cases where the disease is induced by naturally-occurring chemicals such as cycad excitatory amino acids.

OPs and some solvents are known to disrupt the availability of thiamine inside the nerve cell;²³ to induce a rapid influx of calcium into the cell;²⁴ and to inhibit the activities of enzymes, such as the glutamate dehydrogenases and the cholinesterases,²⁵ which balance impulses provided by many different types of neurotransmitters, peptide messengers and excitatories.²⁶ Any chemical pollutant that induces a high intake of neurotransmitters and excitatories on receptors specific to the motor neurones could initiate a chain of effects culminating in the classic symptoms of MND degeneration.

The Sheep Dip Connection

In the case of John Evans, a farmer from Craven Arms in Shropshire, symptoms of Parkinson's Disease first began at the end of the 1960s, after he had handled a compound for warble fly eradication containing coumaphos, an organophosphate (OP) pesticide now withdrawn in the UK. He experienced a worsening of symptoms every time he handled OP compounds, particularly fonophos, used for grain store protection, and the sheep dip, diazinon. A neighbouring farmer, John Green, has also linked his routine exposures to diazinon and other OP-based sheep dips with a neurodegenerative condition diagnosed as Parkinson's Disease. His consultant neurologist, Dr Christopher Barraclough, says that he and his colleagues have noticed an unusually high incidence of the disease amongst farmers of the Welsh border counties, an area renowned for its intensity of sheep farming and subject to a compulsory six-monthly OP sheepdipping regime before it was phased out in 1992. "There must be some environmental agent in Shropshire that is responsible," says Dr Barraclough. John Evans has so far been able to stem the progression of his symptoms by avoiding further contact with chemicals, and by treating himself with various elements and vitamins known to assist chemical detoxification in the liver.²⁷

Killer Chemicals

As the body of anecdotal evidence builds up, so the case linking a number of specific chemicals (or classes of chemicals) to nervous disorders is mounting. Particularly implicated are

organophosphates, solvents and pyridine compounds such as the herbicide, paraquat.

• Organophosphates

Organophosphate exposure, as in John Evans's case, has been linked anecdotally not only with Parkinson's Disease but also with MND, MS and ME.²⁸ The neurotoxicity of organophosphates has been acknowledged for some time — it was their known potency as a military nerve agent that led to their development as pesticides. Concern over their effects on humans, however, dates back to 1930, when a mystery epidemic paralysed 20,000 persons in the southern United States, whose symptoms clearly duplicated various forms of MND. The epidemic was eventually ascribed to the accidental contamination of a local alcoholic beverage known as Ginger Jake with an organophosphate.²⁹ The OP involved, tri-ortho-cresyl phosphate, was widely used as a hydraulic oil additive and in plastics. Subsequently, similar epidemics, fortunately less serious, were reported in other areas where the chemical had been used: in Germany,³⁰ The Netherlands,³¹ South Africa,³² and in Morocco, where 10,000 persons were poisoned by contaminated cooking oil in 1959.³³

In Britain, exposures to OP pesticides have also been associated with various incidences of MND: for example, a number of growers exposed to the sulphur-containing OP, metasystox, in strawberry and glasshouse cultivation have blamed the chemical for their disorders. Dr Rosemary Wareing of the Department of Biochemistry, Birmingham University investigated the post-mortem of a victim who had sprayed his larder against silverfish with a pesticide containing, amongst other ingredients, an OP chemical.³⁴ The Wareing team later performed trials which

demonstrated how pesticides and other chemicals are able to serve as pathogenic triggers to both MND and Parkinson's Disease.³⁵

Humans exposed to OPs have also developed symptoms specific to MS, such as nystagmus³⁶ and optic neuritis,³⁷ and other biochemical abnormalities characteristic of MS. Some sheep farmers in the Shetlands were diagnosed as suffering from MS after exposure to OP-based sheep dips, although the diagnosis was subsequently revised to "OP-delayed neurotoxicity". Lerwick surgeon John Parkin said, however, that he "could not rule out a connection between OP compounds and MS". A link has also been suggested between the dumping of OP nerve gas agents into the sea off the Hebrides between 1945 and 1948 and the incidence rate of MS among the islanders, the highest in the world.³⁸

• Solvents

Chemical solvents have been implicated in a number of incidences of MS and MND, such as Malcolm Rich's case — and their role in causing the disease is now supported by a number of studies. A high incidence of MS has been recorded amongst a wide range of workers exposed to solvents,³⁹ including wood and metal processors, paint sprayers, welders and butchers who handle degreasing solvents. Work by Dr Wareing into solvents containing sulphur has strongly implicated exposure to carbon disulphide and disulfiram, a solvent used in the rubber industry, as potential causal factors in MND.⁴⁰ Despite these industrially-

implicated clusters, there is a higher incidence rate of MS in rural communities, particularly among farmers.⁴¹

• Pyridine Compounds

Another group of chemicals which are based on the toxic pyridine molecule, methyl-phenyl-tetrahydropyridine (MPTP), has been linked specifically with Parkinson's Disease. In 1985, when some heroin addicts in California injected illegally-synthesized MPTP, sold to them on the black market as a heroin substitute, they developed full-blown Parkinson's Disease instantaneously. Although the chemical is not toxic in itself, researchers at the Stanford University School of Medicine in California studying the effects of MPTP on these addicts concluded that it acts as a "Trojan Horse". They postulate that once this molecule has crossed the blood-brain barrier, it is converted into the toxic 1-methyl-4-phenylpyridium (MPP+) by enzymes in the nerve cells of the *substantia nigra*, where it causes massive destruction.⁴²

Clusters of Parkinson's Disease have been documented around wood pulping mills in Canada and Sweden where pyridine-based chemicals are used in the pulping process. The herbicide, paraquat, also pyridine-based, is similarly implicated in Parkinson's Disease amongst gardeners and farmers. A whole cluster of the disease has been recognized in an intensive market-gardening community in Canada.⁴³ Another widely-used herbicide, cyperquat, has been a cause for particular concern since its molecular structure precisely duplicates that of MPP+.⁴⁴

Parkinson's Disease

Parkinson's Disease is characterized by the death of the nerve cells in the *substantia nigra* area of the brain, so-called because of the cells' black colour. These cells produce a type of monamine neurotransmitter called dopamine, which propels impulses along the nigrostriatal network of nerves that innervates an area of the brain known as the *corpus striatum*.⁴⁵ The depletion of dopamine in the *corpus striatum* causes the symptoms of Parkinson's Disease.

Exposure to OPs can cause dopamine depletion.⁴⁶ Researchers have observed in sufferers of Parkinson's Disease a lack of the cholinesterase enzyme and the brain monamine transmitter, serotonin.⁴⁷ Cholinesterase regulates impulses operating along the cholinergic set of nerves⁴⁸ which in turn govern the activities of the dopamine-producing cells in the *substantia nigra*.⁴⁹ Thus, whenever cholinergic regulation is disrupted, symptoms akin to those of Parkinson's Disease could occur.⁵⁰

OP chemicals target and inhibit the activity of cholinesterase and can cause a depletion of serotonin as a secondary effect.⁵¹ In many laboratory trials, OPs have induced an initial cholinergic excess of dopamine, which subsequently "burns out" the dopamine receptors and ultimately produces depletion of dopamine levels in the central nervous system.⁵² One organophosphate, mipafox, has been observed in trials to deplete dopamine levels in the *corpus striatum* itself, triggering a neurochemical reaction identical to that seen in Parkinson's Disease.⁵³

OPs may also create dopamine depletion by inhibiting and disrupting the decarboxylase group of enzymes involved in the pathway of dopamine synthesis in the nigral cells themselves.⁵⁴

In cases of exposure to the pyridine, methyl-phenyl-

tetrahydropyridine (MPTP), converted in the brain to its highly-toxic 1-methyl-4-phenylpyridium (MPP+) form, the terminals of the nigral cells in the *substantia nigra* take up this molecule, which disrupts mitochondrial cellular respiration, leading to the death of these cells and thus depletion of dopamine transmission in the *corpus striatum*. This is probably how exposure to the pyridines found in herbicides and wood-pulping chemicals induces Parkinson's Disease.

While Parkinson's Disease has been linked to dopamine depletion, schizo-phrenia has been linked to an increased turnover in dopamine⁵⁵ as well as an imbalance in other neurotransmitters. Symptoms of short-term schizophrenic psychoses have occasionally been associated with some types of OP poisoning.⁵⁶ Orchard workers in Melbourne, Australia, for example, developed schizophrenic symptoms after chronic exposure to the OP parathion.

The increased likelihood of developing Parkinson's Disease (or MND) because of excessive environmental exposure to manganese,⁵⁷ as observed in manganese miners, is compatible with this chemical hypothesis. Excessive intake of manganese hinders the activity of the enzyme cytochrome P450 in the liver, which is essential for the degradation of many chemical pollutants in the body.⁵⁸ Once this enzyme's activity becomes "saturated" through chronic exposure to manganese, an individual is unable to dispose of additional natural or synthetic chemical neurotoxins in the normal way.⁵⁹ Thus undegraded chemicals, such as OPs, accumulate, cross the blood-brain barrier and exert their specific type of neurotoxic impact on the central nervous system. Laboratory trials with rats have shown that the toxicity of one organophosphate, fenitrothion, rises considerably when administered in combination with manganese.⁶⁰

Lessons from the Past: The Guam Cluster

Since the middle of this century, evidence has trickled in suggesting that chemical triggers may be involved in neurodegenerative diseases. It was the investigation from the 1970s onwards of three substantial clusters of MND, Parkinson's Disease and a dementia similar to Alzheimer's on the island of Guam in the South Pacific that first alerted neuroscientists to the possibility of environmental toxins — whether naturally-occurring or synthetic — playing a key causal role in the disease process.

High levels of manganese and aluminium exist in the local volcanic soils and water supplies of Guam, whilst calcium and magnesium are deficient. Researchers postulated that these factors could have caused the local clusters of neurodegenerative diseases. Before the Westernization of the island in the later half of the twentieth century, the native Chamorro people had subsisted exclusively on foodstuffs grown on these soils. The high incidence rate of the three neurodegenerative diseases — 50 times the worldwide incidence rate — steadily declined as the Chamorro started to eat foodstuffs imported from the West.

Research led by Dr Peter Spencer of the Albert Einstein

Institute of Medicine, New York, isolated a toxic excitatory amino acid called Beta-N-methylamino-L-alanine in the fruits of the false palm (or cycad tree) which the Chamorros had traditionally ground up into flour and eaten as part of their staple diet. Beta-N-methylamino-L-alanine is toxic to nerve cells and Dr Spencer surmised that exposure to this neurotoxin during childhood may have caused neurodegenerative disease in later life.

The Guam researchers concluded that a delicate balance of multifactorial criteria, such as exposures to manganese, aluminium and cycad, individual genetic susceptibility, including the ability of enzymes in the liver to detoxify chemical pollutants, and magnesium deficiency, dictated whether or not a neurodegenerative disease would develop in a Chamorro person and what form it would take. But although neurodegenerative diseases are now increasing rapidly in the West, the majority of researchers appear reluctant to apply the Guam research as an epidemiological template in the search for chemical triggers in the West. Instead the search is for single causes and environmental factors are scarcely being considered.

Time to Listen

Like all phenomena, disease occurs as a result of a combination of causes. Naturally-occurring factors have undoubtedly played a major and, in many cases, deciding role in the aetiology of neurodegenerative diseases both before and after the invention of synthetic products. But researchers have tended to focus upon "natural causes", such as viruses, genetic defects, stress, hysteria and naturally occurring toxins as possible causes — investigation of which soaks up the bulk of research funds — while disregarding the large numbers of synthetic pollutants that have permeated food chains since the industrial revolution. Research into new diseases such as leukaemia and some other cancers, spina bifida, ME or BSE ("mad cow disease") has also concentrated obsessively upon similar "natural" causes — none of which industry can be held responsible for.⁶¹

The problem is perhaps not only rooted in pressures emanating from vested interests, but also derives from the scepticism of an entrenched medical and scientific establishment about any "anecdotal" or "intuitive" insight. Little attempt has been made to listen to the explanations that sufferers themselves give for the onset of their diseases.

Sufferers such as Bertrand and Jean Ashford, Malcolm Rich and John Evans, debilitated by their diseases and without scientific credentials, find it hard to get their voice heard in any official forum. Like many other people exposed to industrial chemicals, they have found themselves outcasts in a medical "underworld", with the authorities apparently conspiring to maintain a ring of secrecy around certain causes which contribute to their condition. In their crippled state, they have few financial resources and little energy left to initiate proceedings against those responsible. Yet the fact that the connection between exposure to chemicals and degenerative nervous disease is now increasingly a matter of public concern is due in large part to their efforts and to that of other sufferers. It is time not only to recognize that the roots of knowledge are nourished by popular observation and "anecdote", but to act on that knowledge — and act fast.

Notes and References

1. Pauling, L., *How to Live Longer and Feel Better*, Avon Books, New York, 1986, chapter 7.
2. See, for example, the evidence presented by Friends of the Earth in May 1986 to the House of Commons Agriculture Committee regarding pesticides and human health.
3. Warren, S. A. et al., "Optic neuritis/MS and diabetes mellitus: a three way association", *Can J Ophthalmol* 18 (5), 1983, pp.228-232. See also Blisard, K. et al., "Investigation of a case of alleged insecticide toxicity; chlordane exposure, MS and peripheral neuropathy", *J Forensic Sci* 31 (4), 1986, pp.1499-1504; Morgan, A. A., "Neurological problems arising in a plant manufacturing tri-aryl phosphate", *J Soc Occupat Med* 31 (4), 1981, pp.139-143; Elo, H. et al., "Increase in the penetration of tracer compounds into the rat brain during MCPA intoxication", *Acta Pharmacol Toxicol* 50, 1982, pp.104-107.
4. Bannister, R., *Brain's Clinical Neurology* (sixth edition), Oxford University Press, Oxford, 1985.
5. When questioned about the significance of this cluster, the local health authority sent me a map depicting MND distribution in the county, pointing out that they could see no cluster of MND in the immediate borough of the town. I pointed out, however, that all of the known cases of MND linked to those previously employed at the plant had involved workers who had either commuted to the factory, or who had since moved away. I received no reply.
6. Bannister, R., op. cit. 4.
7. Itoh, H., "Studies on the delayed neurotoxicity of OP compounds 1 and 2", *J Toxicol Sci* 9, 1984, pp.37-50; Damska, M. et al., "Blood brain barrier in young rabbit brain after dichlorvos intoxication", *Neuropat Pol* 22 (1), 1984, pp.129-137; Kennedy, L. A. et al., "Ethanol neurotoxicity: direct effect on replicating astrocytes", *Neurotoxicol Teratol* 8 (1), 1986, pp.17-21.
8. Beck, D. W. et al., "Glial cells influence polarity of the B/B barrier", *J Neuropathol Exp Neurol* 43 (3), 1984, pp.219-224.
9. Fatehyab, S. et al., "Levels of dopamine, norepinephrine, 5HT in different regions of rat brain and spinal cord following chronic administration of the OP pesticide dichlorvos", *Ind J Exp Biol* 17, 1979, pp.424-427; Fernando, J. C. R. et al., "A striatal serotonergic involvement in the behavioural effects of anti-cholinergic OPs", *Euro J Pharm* 98, 1984, pp.129-132; Borkowska, J. et al., "Effect of monocrotophos on the neurotransmitter system in the CNS", *Roczniki-Panstwowego Zakladu Higieny* 31 (6), 1980, pp.605-610; Biel-Zielinska, A. et al., "Sub-acute pirimicarb intoxication and the levels of biogenic amines in rat tissues", *Przeglad Lekarski* 40 (6), 1983, pp.485-487; Markianos, M. et al., "Altered serotonin uptake kinetics in MS", *J Neurol* 235 (4), 1988, pp.236-237; Carnegie, P. R., "Interaction of 5-hydroxytryptamine with encephalitogenic protein of myelin", *The Neurosciences*, (3rd study program), The MIT Press, Cambridge, MA, Ch. 81, pp.925-928.
10. Nakagawa, M. et al., "Effect of OP pesticides on the activities of lecithin-cholesterol acyltransferase and cholinesterase in the rat", *Chem Pharm*

- Bull* 30 (1), 1982, pp.214-215; Matkovic, B. et al., "Effects of OP pesticides on some liver enzymes and lipid peroxidation", *Gen Pharmacol* 11, 1980, pp.353-355; Calabrese, E. J. et al., "Low erythrocyte G-6-PD activity and suspect to carbaryl induced methemoglobin formation and glutathione depletion", *Bull Environ Contam Toxicol* 36 (4), 1986, pp.506-509.
11. Van Alstine, J. M., "Lecithin cholesterol acyltransferase activity in plasma of patients with MS", *Clin Chem* 29 (11), 1985, pp.1995-1996; Polidoro, G. et al., "Superoxide dismutase, reduced glutathione and TBA-reactive products in erythrocytes of patients with MS", *In J Biochem* 16 (5), 1984, pp.505-509; Mazzella, G. L. et al., "Blood cells Glutathione peroxidase activity and selenium in MS", *Eur Neuro* 22, 1983, pp.442-446.
 12. Bouchier, I., *Gastroenterology*, 3rd edition, Bailliere's Medical Text-books, pp.294-295.
 13. Echobion, D. J., *Pesticides and Neurological Disease*, CRL Press, Boca Raton, 1982, pp.161-163; Hassall, K., *The Chemistry of Pesticides*, Methuen, London, 1983.
 14. Couratier, P. et al., "Cell culture evidence for neuronal degeneration in ALS being linked to glutamate AMPA/kainate receptors", *The Lancet* 341, 1993, pp.265-268; Meldrum, B. and Schwarcz, R., "Excitatory amino acid antagonists provide a therapeutic approach to neurological disorders", *The Lancet* 20 July 1985, pp.140-143.
 15. Poloni, M. et al., "Inversion of thiamine in ALS", *Ital J Neuro Sci* 7, 1986, pp.333-335.
 16. Meldrum, B. and Schwarcz, R., op. cit. 14.
 17. Gadussek, D. C., "Interference with axonal transport of neurofilament as a common pathogenetic mechanism in certain diseases of the CNS", *New Eng J Med* 312 (11), 1985, pp.714-718.
 18. Plaitakis, A. et al., "Pilot trial of branched chain aminoacids in ALS", *The Lancet*, 7 May 1988, pp.1015-1018; Couratier, P. et al., op. cit. 14.
 19. Wolf, G. et al., "Magnesium sulphate subcutaneously injected protects against kainate induced convulsions and neurodegeneration", *Neurosci* 43 (1), 1991, pp.31-34; Meldrum, B. and Schwarcz, R., op. cit. 14.
 20. MND Association, PO Box 246 Northhampton, UK. Research information sheet No 4, February 1993; Meldrum, B. and Schwarcz, R., op. cit. 14.
 21. Conradi, S. et al., "Cholinesterase activity of whole blood and plasma in ALS", *Acta Neurol Scandinavica* 62 (3), 1980, pp.191-192; Nagata, Y. et al., "Regional distribution of cholinergic neurones in MND", *Brain Res* 244 (2), 1982, pp. 223-229; Festoff, B. W. et al., "Plasma and red blood cell cholinesterase in ALS", *Muscle and Nerve* 1981, pp.41-47.
 22. Plaitakis, A. et al., op. cit. 18; Couratier, P. et al., op. cit. 14.
 23. de Reuck, J. et al., "Fatal encephalopathy in acute poisoning with OP insecticides", *Clin Neurol Neurosurg* 81 (4), 1979, p.247.
 24. Bradley, W. S., et al., "Muscarinic receptor alterations as a mechanism of anticholinesterase tolerance", *Toxicol and Appl Pharmacol* 71, 1983, pp.14-23; Tang, L. C., et al., "Cholinergic agonists stimulate calcium uptake in human erythrocytes", *Biochimica et Biophysica Acta* 772, 1984, pp.235-238.
 25. Enan, E. E. et al. *J Environ Sci Health* B17, 1982, pp.549-570; Eldefrawi, M. E. et al., "Neurotransmitter receptors as targets for pesticides", *J Environ Sci Health* B18 (1), 1983, pp.65-88.
 26. Eldefrawi, M. E. et al., *ibid*; Butcher, L. L., "Cholinergic-monoaminergic interactions in the brain", Academic Press, 1978.
 27. Similar symptoms have been recorded in ex-military personnel. For example, William Holland, who worked with an OP-based nerve agent as an aircraft fitter in the British Royal Navy. See "Former soldiers blame their ills on nerve gas trials," *New Scientist*, 1987, news section.
 28. Purdey, M., "Mad Cows and Warble Lies", *The Ecologist*, Vol.22, No. 2, March/April 1992, pp.52-57.
 29. Metcalf, R., "Historical perspective of OP ester induced delayed neurotoxicity", *Neurotoxicol* 3 (4), 1982, pp.269-284.
 30. Humpe, F., *Munch Med Wschr* 89, 1942, p.448.
 31. ter Braak, J. W. G., *Ned T Geneesk* 75, 1931, p.2329.
 32. Sampson, B. F., *Bull Off Int D'hyg. Publ* 30, 1938, p.2601.
 33. Smith, H.V., et al., *The Lancet* 2, 1959, p.1019. *Brain's Clinical Neurology* (op. cit. 4), a standard reference work for neuropathologists, lists chronic poisoning with tri-ortho-cresylphosphate as one of several aetiological triggers to MND. Neuropathologist Dr J B Cavanagh wrote a lengthy review paper of these epidemics, depicting how the "dying back neuropathies" observed in these incidents of OP neurotoxicity duplicate the pathology seen in various neurodegenerative syndromes including that of "Friedrich's ataxia" and the ALS forms of Motor Neurone Disease. See Cavanagh, J. B., *OP neurotoxicity: a model dying back process comparable to certain neurological disorders*. Guy's Hospital reports, 112, 1963, pp.303-319.
 34. Wareing, R., et al., *The Lancet*, 19 Sept 1987.
 35. Wareing, R., et al., *The Lancet* 12 Aug 1989, pp.356-357. The Wareing team also identified deficiencies in the activities of the enzyme, thiomethyltransferase, and other liver enzymes, which are vital for detoxifying the body's intake of chemical pollutants, in people experiencing the early stages of Parkinson's disease, and observed unusually high activities in those suffering the early stages of MND. Such individuals would be unable to degrade sufficiently their dietary and occupational intake of chemical pollutants, and thus unable to prevent the accumulation of chemical toxins in their bodies to critical levels.
 36. Swank, R. et al., "MS in rural Norway", *N Eng J Med* 246, 1952, pp.721-728; Jay, W. M. et al., "Primary position upbeat nystagmus with OP poisoning", *J Pediat Ophthalmol and Strabismus* 19 (6), 1982, pp.318-319.
 37. Ishikawa, S., "Eye injury by OP insecticides", *Jap J Ophthalmol* 15 (1), 1971, pp.60-67.
 38. "MS Sheepdip Link", *The Shetland Times*, 24 June 1988.
 39. Flodin, U. et al., "MS, solvents and pets", *Arch Neurol* 45, 1988, pp.620-623; Lauer, K. et al., "Epidemiological investigations into MS" in S Hesse, 111 and IV, *Acta Neurol Scand* 72, 1985, pp.397-402. The link between MS and solvents was uncovered by Antony Seaton, Professor of Occupational Medicine at Aberdeen University and Professor Bridges of the Robens Institute at Surrey University.
 40. Wareing, R., chapter 21 in *Motor Neurone Disease*, Chapman and Hall, London, 1994; Gafafer, W. M. (ed.), *Occupational Diseases: A Guide to their Recognition*, US Dept of Health Education and Welfare, Washington DC, pp.107-108.
 41. Flodin, U. et al., op. cit. 39; Lauer, K. et al., op. cit. 39; Swank, R. et al., op. cit. 36.
 42. Ferry, G., "New light on Parkinson's disease", *New Scientist*, 5 February 1987, pp.56-59.
 43. Barbeau et al., *Can. J. Neurol. Sci.* Vol. 14 (1), February 1987, pp.36-41.
 44. Ferry, G., op. cit. 42.
 45. *Ibid*.
 46. Fatehyab, S. et al., op. cit. 9.
 47. Ruberg, M. et al., "Cholinesterase activity in the CSF of patients with neurodegenerative diseases involving cholinergic systems", *J Neurol Neurosurg and Psych* 50, 1987, pp.538-543; Johnson, S. et al., "Cholinergic enzymatic activity in CSF of patients with various neurological diseases", *Clin Chim Acta* 35, 1971, pp.421-428; Adem, A. et al., "Extra neural cholinergic markers in AD and PD", *Prog Neuro-psychopharmacol Biol Psychiat*, 10, 1986, pp.247-257; Smith, R. C. et al., "Cholinesterase enzymes in the blood of patients with AD", *Life Sciences* 30 (6), 1982, pp.543-546; Coyle, J. T. et al., "AD, a disorder of cortical cholinergic innervation", *Science* 219 (4589), 1983, pp.1184-90; Perry, E. K. et al., "Cholinergic correlates of cognitive impairment in PD: comparisons with AD", *J Neurol Neurosurg Psych* 48 (5), 1985, pp.413-421; Atak, J. R., et al., "Blood cholinesterases in AD", *J Neurol Sci* 70 (1), 1985, pp.1-12; D'Amato, R. J. et al., "Aminergic systems in AD and PD", *Ann Neurol* 22, 1987, pp.229-236.
 48. Eldefrawi, M. E. et al., op. cit. 25.
 49. Wolfarth, S. et al., "The effects of intranigral injections of picrotoxin and carbachol in cats with a lesioned nigrostriatal pathway", *Neurosci Lett* 11, 1979, pp.197-200.
 50. Alkondon, M. et al., "Cholinergic involvement in the modulation of oxotremorine-tremor in mice by propranolol", *Arch Int Pharmacodyn* 277, 1985, pp.161-167; Ray, S. K. et al., "Central cholinergic-dopaminergic interaction in carbaryl-induced tremor", *Eur J Pharmacol* 119 (3), 1985, pp.251-253; Summers, C. et al., "Effects of specific dopamine lesions and dopamine receptor sensitivity on carbachol induced thirst in rats", *Psychopharmacol* 73, 1981, pp.180-183.
 51. Eldefrawi, M. E. et al., op. cit. 25; Fatehyab, S. et al., op. cit. 9; Fernando, J.C.R. et al., op. cit. 9; Borkowska, J. et al., op. cit. 9; Biel-Zielinska, A. et al., op. cit. 9.
 52. Fatehyab, S. et al., op. cit. 9; Naseem, S. M., "Effect of OP on dopamine and muscarinic receptor binding in rat brain", *Biochem Int* 20 (4), 1990, pp.799-806; Kutsenko, S. A. et al., "Cerebral catecholamines in acute rat poisoning with dimethoxydichlorovinyl phosphate poisoning", *Farmakologija i Toksikologija* 44 (3), 1981, pp.334-338; Coudray-Lucas, C. et al., "Brain catecholamine metabolism changes and hypothermia in intoxication by anti-cholinergic agents", *Acta Pharmacol et Toxicol* 52, 1983, pp.224-229.
 53. Freed, V. H. et al., *Euro J Pharmacol* 35, 1976, p.229.
 54. Hassall, K., op. cit. 13; Echobion, D. J. op. cit. 13; Paterson, C. R., *Essentials of Human Biochemistry*, Pitman, London, 1983; O'Dell, B. L. et al., "Effect of copper status on brain neurotransmitter metabolism", *J Neurochem* 26, 1976, pp.451-455; Carlsson, A., *Advances in Neurol* p.59, 1974, Vol. 5. in McDowell, F. and Barbeau, (eds.) Raven Press, New York.
 55. Wiesel, F. A. et al., "Central dopamine receptor occupancy in schizophrenic patients", *Arch Gen Psych* 45, 1988, pp.71-78.
 56. Gershon, S. et al., "Psychiatric sequelae of chronic exposure to OP insecticides", *The Lancet* 7191, 1961, pp.1371-1374; Bradwell, R., consultant psychiatrist, Doncaster Royal Infirmary, UK, "Psychological manifestations in a case of acute on chronic OP poisoning", unpublished paper; Echobion, D. J. op. cit. 13; Metcalf, R., op. cit. 29.
 57. Yase, Y., *The Lancet* 11, 1972, pp.292-296; Ferry, G., op. cit. 42.
 58. Maines, M. D. et al., "Studies on the mechanism of induction of haem-oxygenase by cobalt and other metal ions", *Biochem J* 154, 1976, pp.125-131.
 59. Matkovic, B. et al., op. cit. 11; Hassall, K., op. cit. 13; Echobion, D. J., op. cit. 13.
 60. Malik, J. K. et al., "Studies on the interaction between manganese and fenitrothion in rats", *Toxicol Letts* 36, 1987, pp.221-226.
 61. See, for example, "DDT poisoning and the elusive virus X: a new cause for gastro-enteritis", *Am. Journal of Digestive Disease*, Vol. 16, No. 3, March 1949, pp.79-84.

The Big Backyard

Composting Strategies in New York City

by

Thomas Outerbridge

Massive quantities of organic waste are produced every day in New York City, a high percentage of which could be safely and economically composted. Pilot schemes have shown that composting is technically feasible, but there are difficulties in sorting, collection and transport. Nevertheless, New Yorkers are moving ahead on several fronts to find creative solutions to these obstacles so as to develop a comprehensive composting system that might enhance the local, national and even global environment.

"New York City is the delta of a Nile of soil from all the farm fields of the world flowing through the supermarkets and into the landfill."¹ The words of Karl Hammer, an organic farmer who sells his produce in New York, are a reminder that the problems of waste disposal revolve not only around the hazards and costs associated with disposal but also the material and resources that are lost when rubbish is buried or burnt.

The 7.5 million inhabitants of New York City throw away approximately 26,000 tons of solid waste each day — more rubbish than any other city in the world.² Approximately 12,000 tons of this are generated by the residential and institutional sectors, and are collected and disposed of by the New York City Department of Sanitation (DOS). The remainder comes from commercial establishments and is handled by private waste hauliers.

Nearly all DOS-collected waste is taken by truck to a network of waterfront transfer stations and then by barge to the Fresh Kills Landfill in Staten Island. The rest, primarily unregulated medical waste, is burned in a 750 ton-per-day incinerator built in Brooklyn in 1962. Most privately collected waste is not disposed of at Fresh Kills because of high tipping fees, introduced to prolong the landfill's life. Instead, it is compacted and loaded into trailers or rail cars at private transfer stations and taken to commercial landfills

in states such as Pennsylvania, Arkansas and Ohio.

Fresh Kills is New York City's only remaining landfill site, but it is the world's largest — an engineered mountain of garbage covering 2,900 acres of what was once wetland. At the end of its life, it is expected to consist of four pyramids up to 435 feet high, making it one of the largest human-made structures on the planet.

The projected lifespan of Fresh Kills is anywhere from 10 to 20 years, depending on a number of factors: the effectiveness of programmes to reduce and recuperate garbage at source; the outcome of plans for a 3,000 ton-per-day DOS incinerator in Brooklyn; and whether changing economics, politics or regulations make burial at Fresh Kills a more appealing option for commercial waste handlers than out-of-state disposal. However, there will never be another landfill started in New York City. When Fresh Kills is filled to capacity, any waste generated in the City which is destined for landfill, including incinerator ash, will have to be transported to distant locations.

An Obvious Solution

Much of New York's waste consists of recyclable materials such as paper, metals and glass. But at least 20 per cent and as much as 40 per cent of the City's waste stream is organic matter that could be readily composted.³

As a means of dealing with organic waste, composting has several clear advantages over methods that have been traditionally preferred and are still

employed by New York City. When organic waste is landfilled — aside from occupying valuable space — it decomposes anaerobically, giving off unpleasant odours and generating methane, a potent greenhouse gas. Some putrescent organic wastes, because of their high moisture and protein content, can release liquid containing organic acids and soluble nitrogen compounds which leach down through the landfill, pick up other potentially toxic components, and eventually drain away as "leachate", a potential contaminant of surface and groundwater. Fresh Kills produces an estimated one million gallons of leachate every day.

The incineration of organic waste is equally problematic. Because of their water content, many organic substances do not burn well, contributing to incinerator emissions and ash.⁴

Composting, however, does not create such problems, as long as the organic material is not contaminated with toxics. More importantly, when spread on the land, compost returns nutrients and organic matter to the soil, essential for sustaining soil health and productivity.

DOS facilities currently exist to compost a small portion of the waste it collects, and the resulting compost is spread on parks, gardens and yards and around street trees. If composting systems were developed to deal with a large proportion of the City's waste, the compost produced could provide the humus for widespread park restoration, conversion of abandoned areas, land reclamation and soil remediation. More ambitiously, the three principal by-products of the

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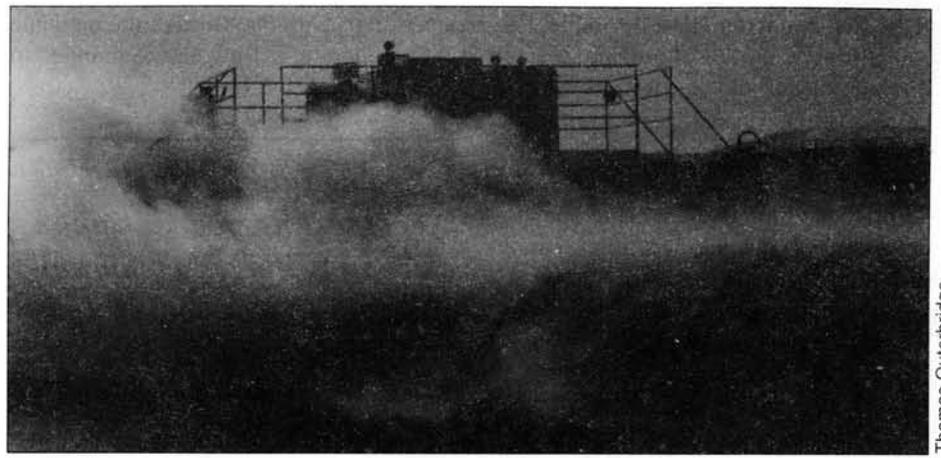
composting process — heat, carbon dioxide and water — together with the compost itself, could be used for intensive greenhouse agriculture within the City. According to some estimates, New York City could eventually meet much of its own demand for vegetable produce in this way. For this to happen on a significant scale, however, a considerable shift in attitude will be required from elected officials, waste planners, industry — and the public.

Pilot Projects

In 1990, the Department of Sanitation constructed its first compost facility on a temporarily unused portion of the Fresh Kills Landfill. The 40-acre pad of crushed stone laid on top of compacted garbage was designed for composting garden waste, such as leaves, grass clippings, wood chips and Christmas trees. Consequently, it employs a relatively low-tech approach, in which the material to be composted is placed into piles roughly six feet high, 12 feet wide and several hundred feet long. The piles, known as windrows, are turned mechanically and watered to maintain optimal moisture and oxygen levels for aerobic decomposition. In nitrogen-rich windrows, such as those containing a high proportion of grass clippings, microbial activity (and the consumption of oxygen) is rapid, necessitating turnings as often as three times a week. Leaf windrows only need turning once a month because of a slower decomposition rate.

These seasonal, outdoor materials are relatively non-putrescent, easy to handle and easy to segregate and collect. Food waste, however, which accounts for about 12 per cent of the entire solid waste stream, is more problematic. It can attract vermin, flies and cockroaches, and give off bad smells. Its high moisture content, which can result in leachate and cause anaerobic conditions, its highly putrescent nature and the presence of pathogens like salmonella all dictate special care in composting, especially on a large scale.

In November 1991, the DOS began a pilot programme in which residents of 3,500 medium- to upper-income households in Brooklyn were asked to separate their food scraps and food-soiled paper for special collection and composting at Fresh Kills. Although the neighbourhood has in the past been very receptive to recycling its paper, metal and glass, di-



With internal temperatures of 55°C, windrows at the Fresh Kills Compost Facility release steam as they are turned.

version levels remain between 20 and 40 per cent after more than two years.⁵ Nonetheless, the scheme is to be expanded in 1994 to include an additional 14,500 households in residential areas of varying density and income level.

In the cafeterias and kitchens of State and City institutions where a large number of people are regularly concentrated, only a few workers need to be trained to separate food waste from the rest of the garbage. In many of the 2,500 institutions spread throughout the City — prisons, hospitals, universities and nursing homes, for example — more than 40 per cent of the waste stream comprises organic material, mainly food waste. In January 1992, the DOS began another pilot programme to collect food waste from select Staten Island institutions, which now diverts 300 tons a year to the Fresh Kills compost facility. If the programme were expanded to include all Staten Island's institutions, it would account for an additional 1,500 to 2,000 tons of food waste each year.

At Fresh Kills, the relatively small amount of food the DOS collects is composted outdoors, mixed with wood chippings and other less putrescent substances. In future, quantities of more than 100 tons per day would have to be processed indoors where greater control could be exercised, and any bad-smelling gases generated could be contained and treated by filtering them through layers of compost and soil, a process known as biofiltration.

These pilot projects have shown that composting in New York is technically feasible. Pests, odours and disease do not present significant difficulties. The main problems revolve around the process of separation and collection. Persuading consumers at home to separate their waste is not easy — particularly if they live in

high-rise buildings constructed with single-stream waste disposal in mind, where even separating dry recyclable materials such as glass, metal and plastic is difficult.

If not carefully separated, organic waste can be contaminated by various toxic materials so that the compost produced is suitable for little except landfill cover. Organic compounds, such as PCBs, solvents and pesticides, are one source of contamination. Another is heavy metals from common household products such as batteries (mercury, cadmium and zinc), leather (chromium), paint (chromium, lead, cadmium), plastic (cadmium), paper (lead), and cosmetics (cadmium and zinc).⁶ In addition, physical contaminants such as shreds of plastic and pieces of glass lower compost quality seriously. If the public does not ensure that these toxic materials are kept separate from organic waste, then they will either have to be eliminated from the waste stream by changing production processes or sorting them out at the compost facility before the composting process begins.

Collection is proving costly, not only financially, but also in terms of the environmental impact of additional trucks on the street. Using multi-compartment vehicles to collect two or more streams in a single vehicle has so far not proved promising. In addition, special collections for organics cannot be substituted for waste collections without labour-union negotiations — an extremely drawn-out process.

Building Larger Facilities

Composting requires a considerable amount of space, and it is probably not feasible to mount a large-scale composting operation to serve the whole of New York on a single location, such as the Fresh

Kills site. Nor would it be desirable. Fer-rying huge quantities of organic waste to one central site, and then transporting the compost out to various users would cause unnecessary expense and traffic problems.

Advocates of municipal composting are therefore considering siting a number of facilities around the City. Although it is unclear how many and how large these facilities should be, planners are thinking in terms of plants dealing with 50 to 250 tons per day and occupying 3 to 10 acres in industrial areas of the City. Although large in comparison with a backyard or community garden composting system, they would still be decentralized, given the City's density and quantities of waste generated. For example, it would require five 100 ton-per-day facilities to absorb 50 per cent of the organic waste of Brooklyn — one of the five New York boroughs.

It is anticipated that these facilities will be partially, if not wholly, enclosed. In at least one, the DOS will couple the composting process with agriculture. Greenhouse cultivation could add a further level of odour control by using the compost gases to encourage plant and vegetable growth as well as creating jobs and improving the economics of the operation through the sale of the crops.

For another of its large compost facilities, the DOS is investigating the potential for anaerobic digestion prior to aerobic composting as a means of generating methane. Today, facilities in Brecht (Belgium), Amiens (France) and Elsinore (Denmark), which anaerobically digest solid waste, power all their plant

operations with one-third of the methane they generate, selling the remainder to local utilities.

The future of urban composting depends upon urban "village" communities taking more control over their local affairs.

Large municipal composting facilities could be supplemented by commercial operations. Over 4,000 tons of organic waste is produced each day in New York City by commercial organizations such as restaurants, grocery markets and food processors. However, there is as yet no infrastructure for commercial organic waste in New York City, and the development of one will come only slowly as long as petrol prices are kept low, and commercial landfill operators in the Western states continue to bury garbage without taking account of the long-term costs of landfill.

Nevertheless, efforts are underway to initiate the City's first private composting facility for food wastes on industrial land either in the Bronx or in Brooklyn. Attention to compost quality to meet the highest standards of the horticultural market will be necessary to make this venture economically viable.

Multiple facilities in New York City will provide an infrastructure adapted to available composting technologies, local waste-stream characteristics and the differing local conditions across the City's five boroughs. Through decentralization, they will lessen truck traffic, which is a principal concern of host communities, and generate compost suited to local parks, gardens and residences. The DOS is also working with organizations such as the Municipal Art Society to encourage unique designs of facilities that are aesthetically pleasing.

On-Site Composting

However, these municipal and commercial facilities would still require the centrally-organized collection and transport of the waste and the distribution of compost. The financial costs, together with the difficulty of finding large enough sites, has led the DOS to promote, and in some cases mandate, a much more

decentralized approach — composting on the site where the waste is produced.

In the case of grass clippings, this simply amounts to "leaving well alone". Despite New York City's dense population, an estimated two per cent of its residential waste stream consists of grass clippings. Because of their high moisture content (80 to 85 per cent), they are particularly inappropriate as incinerator fuel, and their high nitrogen content (three to five per cent) makes them especially problematic in a landfill where they create methane and contribute to the volume and toxicity of leachate.

But these same characteristics make grass clippings an ideal material to be left on lawns where they "disappear" in a matter of days, reduce evaporation and thus the need for watering, and provide at least one third of the fertilizer needed. Although these benefits can be obtained by saving the labour of collecting up the clippings in bags, an infatuation with immaculate lawns, encouraged by fertilizer and chemical interests, results in an estimated 78,500 tons of grass clippings entering New York City's waste stream each year. The DOS, therefore, has begun a "leave it on the lawn" programme, which forbids any institution or resident from placing grass clippings out for DOS collection (unless such collection is part of a DOS composting programme).

Along the same lines, the DOS is promoting small-scale composting at home, in a backyard or community garden, or on-site at institutions and housing complexes. This is being done in conjunction with the City's Botanical Gardens, which operate in every borough except Manhattan, and a number of organizations promoting the use of vacant land for community and school gardens, of which there are now more than 1,000 in the city. How successful these schemes will be is not yet clear, but in small family homes with gardens, more than 73,000 tons of food waste and 120,000 tons of grass clippings and leaves could be composted each year.

There are also possibilities for larger, on-site composting systems. For instance, the Department of Parks and Recreation, which oversees the City's 13,000 acres of park land, has always composted some portion of its organic waste, such as autumn leaves and grass clippings; under DOS mandate, it is rapidly moving towards diverting all of it, about 100,000 tons per year, to a decentralized network of low-tech composting operations. Other

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examples include: the Bronx Zoo, which composts several thousand tons of animal manure every year on site, and the 153-acre, 6,000 household Starrett City housing complex in Brooklyn, which has dedicated a half-acre site to composting 1,000 tons of grass and leaves each year.

Food waste could also be composted in quantity on a decentralized basis in institutions and housing complexes, some of which house more than 10,000 people.

As a first step in this direction, the DOS will construct a compost facility for the Rikers Island Correctional Facility, operated by the New York City Department of Correction and located just off the borough of Queens. Rikers has approximately 18,000 inmates and prison staff spread among 10 different jails. Although, given the increasing number of people imprisoned, land on Rikers is in short supply, a one-acre site has been designated for an enclosed compost facility, the City's first system of this size for food waste. It should be working by the winter of 1995, when it will take all organic material generated on the island, including some 12 tons of kitchen and cafeteria waste each day, which is currently transported by truck and barge to Fresh Kills.

The DOS also plans to supplement the Rikers facility with a greenhouse, where the flower and vegetable beds would filter and use many components of the exhaust gases from the compost building. Each ton of waste composted would provide 10 to 50 gallons of water, 500 pounds of carbon dioxide, between 250,000 and 750,000 kilocalories of energy (to be used as extra greenhouse heat) and various nitrogen compounds.⁷ The greenhouse would be incorporated into the prisoners' work programme to help provide inmates with horticultural skills before they leave prison.

Expensive Rubbish

While the Rikers project is valuable in many ways, it also points to an obstacle to widespread implementation of food waste composting systems of this size or smaller. The facility is likely to cost in excess of one million dollars, mainly in construction materials and mechanical equipment. To date, composting technologies have been geared either towards the homeowner, looking for a backyard bin capable of absorbing several pounds of material a day, or to the municipal or industry

official with a large waste stream where substantial capital investment can be offset to some degree by economies of scale. In between, there is a large gap, waiting to be filled with an inexpensive, enclosed system for highly putrescent materials such as food waste, that will function in confined quarters, reliably control all odours and leachate, and provide optimal biological conditions for decomposition. The latter is critical because the faster the composting process, the less space is needed.

To meet this demand, the DOS is working with the Brooklyn Botanic Garden to install a prototype, low-cost, enclosed composting system designed by the Gaia Institute of the Cathedral of St John the Divine. The system will compost several hundred pounds of food waste generated through the Garden's daily catering events. Early workshop tests of the Gaia Institute system indicate low capital costs, given a minimum of moving parts and rigid structures. The tests have also shown that food wastes can be reduced in volume by 50 per cent in three days and a reasonable degree of compost stability obtained after seven days. This rapid rate of decomposition depends on two factors: small particle sizes, since bacteria and other decomposers work on the surfaces of materials, and minimal agitation of the decomposing mass.⁸

If successful, the Brooklyn Botanic Garden project could help to overcome one of the main technological barriers to widespread, decentralized composting of food waste in an urban area such as New York City by demonstrating how food could be composted in basements or maintenance areas within a residential complex, or even on rooftops, in conjunction with rooftop greenhouses.

On-site composting initiatives also hold out great promise for the commercial sector. For example, the New York City Food Distribution Centre in the South Bronx, which is one of three centres in the North-Eastern United States for imported food, generates well in excess of 100 tons of spoiled and unsold food every day. The DOS and the Centre are currently exploring possibilities of composting on-site, instead of transporting spoiled produce to landfills in the Mid-West. This practice would also create jobs in one of the City's most depressed areas. The Centre could use the compost for agriculture, since it has an extensive acreage of unused land and, of course, already has its own food distribution network.

Striking a Balance

In terms of cost and environmental impact, on-site composting systems are preferable. The degree of resident participation and the development of an efficient collection infrastructure will determine how much of the residential organic waste stream will need to be processed through larger-scale facilities, and how much can be processed locally.

In a wider sense, the future of urban composting depends upon the social development of cities as a whole. If, as is being increasingly advocated, smaller urban "village" communities are encouraged to take more control over their local affairs, then constructive reuse of waste will probably become a central concern, and composting will go forward on a relatively decentralized basis. Domestic consumers may be more inclined to sort out their waste if they know it is going towards a local project which they can see the benefits of, rather than to a distant facility that sells the compost to pay for collection costs.

Nevertheless, the size of New York City with its enormous variety and its dense concentrations of people in certain areas will inevitably require a multi-faceted approach. As the Fresh Kills garbage mountain illustrates, New York has a special waste problem; it will have to find special solutions.

Notes and References

1. Hammer, K., Vermont Compost Company. Personal communication, December 1993.
2. Giradet, H., *The Gaia Atlas of Cities: New Directions for Sustainable Urban Living*, Anchor Books, Doubleday, New York/Gaia Books, London, 1992.
3. New York City Department of Sanitation, Appendix Volume 1.2, "Waste Stream Data" in *Comprehensive Solid Waste Management Plan for New York City*, New York City Department of Sanitation, New York, 1992.
4. See "Municipal Waste Incineration", *The Ecologist*, Vol. 24, No.1, p.14-20.
5. Outerbridge, T. and LaValva, R., *Building a Composting Infrastructure for New York City*, Bureau of Waste Prevention, Reuse and Recycling, New York City Department of Sanitation, New York, 1993, draft.
6. Marco de Bertoldi, "Science and Engineering of Composting", *Proceedings of an International Composting Research Symposium*, March 27-29, 1992, Columbus Ohio, Renaissance Publications, Worthington Ohio, 1993, p. 528.
7. Fulford, B., BioThermal Associates, Personal communication, 1994.
8. Mankiewicz, P. et al., *On-site Food Waste Composting Systems: Decentralized Urban and Suburban Waste into Resources Strategies*, The Gaia Institute, Cathedral of St John the Divine, New York, 1993, draft final report.

Urban Renewal in Denmark

Fighting for Control

by

Tracey Clunies-Ross

Residents of Vesterbro, an inner-city district of Copenhagen, recently proposed several schemes to revitalize their neighbourhood by dividing it into urban villages and introducing projects to treat their own sewage, reduce water and energy demands, and improve facilities and recreational areas. Their vision and efforts, however, are being undermined by the authorities' own renewal process.

In cities all over the world, there are "problem areas" where poor-quality housing and poor provision of services co-exist with high unemployment, high crime rates, poverty, drug-taking and prostitution. By pumping money into these areas, and upgrading the housing, local authorities assume that social problems will be "solved". The logic is superficially attractive: better-quality housing attracts higher rents, and upgraded areas become home to people who do not display the behaviour associated with poverty. But in fact, the poverty and the people are merely displaced.

In the planners' eyes, the inhabitants of run-down areas are often seen as "obstacles" to "urban renewal". Even when residents put forward their own suggestions for improving their neighbourhood, the planners often ignore them. In Denmark, for instance, the government is to spend some six billion kroner (US\$9 billion) over the next decade upgrading Copenhagen's Vesterbro district, one of the biggest slum areas of northern Europe. Radical proposals from residents' groups to introduce permaculture concepts have been sidelined by the authorities, who are pushing ahead with their own plans for "improving" the area. The inhabitants fear that the improvements will lead to such steep rent rises that they will have to move out. What could be a process for revitalizing Vesterbro has become a process through which residents are marginalized and the community threatened.

Vesterbro Past and Present

Vesterbro has a unique history and culture. Until the advent of industrialization in the middle of the last century, it was the food market area of Copenhagen. Farmers travelling in with their produce would often stay overnight there before making the return journey home. Many small shops and businesses were set up in the area to provide farmers with goods and services. Vesterbro also developed as an entertainment area within Copenhagen, well-known for its music and dance halls.

With industrialization, many of the farmers leaving the land moved into the city. They gravitated to Vesterbro as the area they knew best. But the available lodgings were small, and those doing well quickly moved out of the area. This trend continued, with the area becoming a first place to live: a place of small tenement apartments where people attempted to do as much as possible for themselves (including growing their own vegetables) in an effort to keep down their cost of living. The presence of so many people nevertheless attracted numerous small shops and businesses, and the area thrived.

After the Second World War, Vesterbro, like inner-city areas elsewhere in Europe, began to degenerate: as small traders were forced out of business by their bigger rivals, unemployment grew, the maintenance of houses became sporadic or non-existent, and many apartments and shops began to stand empty.

In the 1970s, Vesterbro was used to accommodate "overspill population" from elsewhere in Copenhagen, adding to the

area's social problems and rising unemployment. Vesterbro became known as Copenhagen's centre for drugs and prostitution, and by the 1980s, over half those of working age in the area were on social welfare.

Taking the Initiative

Thirty-six thousand people currently live in Vesterbro and have a strong sense of community. In 1989, a "Green City" competition, run by one of Denmark's environmental organizations, spurred some of the residents into submitting an entry. Instead of putting forward a development master plan, the residents proposed that Vesterbro should be grouped into six to nine urban villages which would provide a framework for controlling plans and projects and overseeing the type of improvements and the level of rents.

The "Vester-Gror" plan, as it was called, included a proposal to establish an Urban Renewal Centre which would co-ordinate activities in the area, bringing together public services, private owners and tenants. In such a forum, it was envisaged, representatives from different action, community and urban village groups would help direct developments.

In addition, the plan included an Ecological, Research, Development and Information Centre (Lille Folkepark) — a community house for the residents' groups, which would investigate and demonstrate solar heating systems, waste water treatment, and the integration of plants and animals into the urban area. A city farm, which would be both recreational and educational as well as

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productive, was also proposed.

Other proposals put forward in the Vester-Gror plan included tree-planting and greening of abandoned sites; the development of recreational areas; and recycling and composting schemes. The residents of one housing block, motivated in part by a desire to use resources more efficiently and to address the wider ecological problems faced by all cities, proposed creating a "permaculture block". Instead of sending human wastes and dirty water into the sewage system, the residents drew up plans to use a biogas plant and a "hanging garden" reedbed system to treat wastes and allow dirty water to be recycled. It was calculated that by putting greenhouses in the courtyard of the housing block, and utilizing the vertical space available for growing plants, the 500-600 residents could produce 12-15 per cent of their basic food needs. The residents also envisaged using active and passive solar heating systems to reduce their energy needs.

The "Vester-Gror" plan was the result of months of discussion amongst residents' groups and reflected many of the social, cultural and ecological issues that were of most concern to those living there. It led to other initiatives being put forward for reviving the area. Residents, for example, proposed converting the largely-disused old meat market into a space for local recreation and workshops. Plans were put forward to redevelop some of the buildings as music, metal, wood and craft workshops, and there were also plans for an ecological food market and a theatre. Because of the cheap rents in the area, musicians and artists are already part of the community, and rather than lose them through high rents associated with urban renewal, the residents wanted to create space where they could continue to work and participate in community life.

Another project, which has now been running successfully for several years, involves a group of people from Vesterbro travelling twice a week to a small permaculture farm 20 kilometres from Vesterbro to grow their own food. The permaculture holding has been developed on a three hectare field rented to the group by an organic farmer. Despite some poor growing seasons, the group have managed to grow vegetables, plant trees, dig ponds, and establish the groundwork for a productive system. Vegetable wastes are brought out by the group from Copenhagen and composted, and a local greengrocer in Vesterbro is now contributing

The people of Vesterbro want to stay in the area rather be moved on as part of a gentrification process.



Tony Andersen

all his wastes to the project. The group would like to link the scheme with an unemployment project so that more labour could be available; if people could be on site more than two days a week, they would also like to keep a few animals. When the project has become fully established (in a period of eight to nine years) the group expects to be able to provide food for 60-70 people.

Losing Control

The Vester-Gror plan won the Green City competition, persuading the government to accept that the residents' project had merit. The ministries of Environment, Energy and Housing provided funds to employ Tony Andersen, an architect living in Vesterbro who had long been active in the community. His brief was to develop the projects and elaborate a strategy for Ecological Urban Renewal, in conjunction with local residents. An Urban Renewal Centre was also set up to provide a forum for overseeing the development plans and to resolve conflicts between the different interest groups in Vesterbro — from the local authorities to landlords and residents' groups. The latter have grouped themselves together to form an umbrella group called the *Repræsentantskabet*.

Despite initial support from the government, however, residents have found their efforts to implement their vision for revitalizing the area undermined at every turn. The only projects which have been able to proceed without opposition from the authorities are those that do not challenge the *status quo*. The creation of recreation areas, small parks and green spaces has been allowed to proceed, as have tree-planting and the painting of murals. Green areas have been created, climbing plants established and a composting project for

household wastes is in operation. Other plans — for example, the conversion of the old meat market and the setting up of the permaculture housing block — have proved difficult, and in some cases impossible, to implement.

The local authorities, controlled by the Social Democratic Party, have been consistently antagonistic to the ecological and social aspects of the resident's proposed projects. Whereas the residents are anxious that the existing cultural and social mix within the area should be retained, the authorities view the upgrading of Vesterbro very differently. For them, urban renewal, in Vesterbro as elsewhere, is essentially a technical issue, requiring the renovation of buildings and the improvement of outside spaces. It is not to be confused with community development or alternative technology experimentation. The authorities have thus thwarted the resident's more radical proposals relating to alternative energy production, water-use reduction and waste treatment systems.

Faced with the shelving of most of their projects, the residents applied for new funding from the European Community (EC) to set up an ecological research and development centre in Vesterbro. The application had the approval of the Ministry of Housing and the municipality and 1.3 million kroner (\$1.9 million) was awarded for the project.

In 1991, the EC money came through but was paid to the municipal authorities, who refused to release it for the proposed centre. For months, the local residents' groups campaigned to have the money released, but with no success: local politicians opposed to the idea of integrated ecological/social housing projects simply blocked the funds. The money was eventually reallocated and spent on a ventilation system for a nearby theatre.

Rising Conflict

Meanwhile the authorities pushed ahead with their own urban renewal plans, engaging two urban renewal companies — one controlled by the Social Democrats and one owned by the landlords' association. Neither company had a local base and neither was prepared to entertain proposals that went beyond technical improvements to housing.

The Urban Renewal Centre, which was supposed to bring together all the different parties in the area, threw its weight behind the Urban Renewal Companies. Objections from the residents, voiced through the *Repræsentantskabet*, were met by a smear campaign, with articles appearing in the press accusing a small

group of "eco-fanatics" of blocking the urban renewal process by scaring people away with talk of "advanced ecological systems".¹

With construction work on the municipality's urban renewal plans due to start in 1994, the last few months of 1993 saw increasing conflict between the residents and the authorities. Residents fear that, once the area has been redeveloped, rents will rise and the original inhabitants will be forced out. Although the authorities have long dismissed such claims as scare-mongering, insisting in 1991 that the annual rents would not rise to more than 450 kroner per square metre (Dkr/m²), it now appears that they will more than double from their current average level of 250 Dkr/m² to 580 Dkr/m².²

Fighting a Rearguard Action

In protest at the disregard being shown for the resident's wishes, the *Repræsentantskabet* refused to take its seat on the board of the Urban Renewal Centre. Embarrassed by the potential rejection of their plans, the two urban renewal companies entered into urgent discussions with leaders of the residents in the latter part of 1993 and early 1994. The discussions have so far proved fruitless.

With the residents rapidly losing any element of control over the whole renewal process, they have had to make progress where they can. On the one hand, they are still attempting to forge ahead with the introduction of ecological projects, albeit on a much smaller scale than originally envisaged. On the other, they are using what rights they have to block those elements of the renewal programme which they perceive as threatening. One tactic has been to veto improvements to apartments — new bathrooms, for example — which would cause rents to rise to a level which they could not afford to pay. As Tony Andersen comments:

"The possibility of upgrading the housing in the area to incorporate reduced energy requirements, less waste production and more self-sufficiency in terms of food is an exciting concept and one which the residents are loathe to relinquish. The *Repræsentantskabet* is determined to force the issues up the agenda so that they receive a wider political discussion, but in the meantime it is a matter of having to fight from house to house."³

Whether or not the residents succeed in forcing the authorities to heed their voices and to implement their proposals for revitalizing Vesterbro remains to be seen. But whatever the outcome, the residents of Vesterbro have already done much to dispel the bureaucratically convenient but misleading image of inner city dwellers as social misfits devoid of any sense of community and unconcerned with ecological issues. In the case of Vesterbro, it is not the residents who are the obstacles in the way of urban renewal but the authorities.

The author would like to thank Tony Andersen whose help in researching this article has been invaluable.

References

1. See for example: 'Øko-fanatikere bremser bvfornyelse', *Ritzau*, 15 September 1992; *Berlingeren*, 2 September 1993.
2. Tony Andersen, Personal communication, 29 December 1993.
3. *Ibid.*

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Hydrodollars in the Himalaya

Nepali NGOs are criticizing the large-scale, foreign-funded Arun III dam because it will stifle the local small-scale hydropower industry, add to Nepal's foreign debt and benefit mainly an urban elite. But the Nepali government and its foreign donors insist that there is "no turning back". After several postponements, the Arun scheme is scheduled to be submitted in July to the World Bank's Executive Board for funding approval.

When a World Bank team landed in Kathmandu in May 1993 to finalize the 402-megawatt (MW) Arun III hydroelectric project, it was in for a shock. The Bank had come under immense pressure to withdraw from the notorious Sardar Sarovar dam on the Narmada river in India because of the lack of local participation and inadequate provisions for resettlement¹, but felt confident that the Arun project had benefited from "unprecedented economic and environmental appraisal".

But Arun III has become the focus of Nepal's first public campaign, testing the country's fledgling democracy.² The campaign is not only about ecological devastation and the displacement of local people. It is also about economics and development ethics, and symbolizes Nepal's dilemma: will the country continue its drift into debt and dependency or will it embark on a path of self-reliance?

Nepal's White Elephant

For those seeking to develop Nepal economically, hydropower is one of the country's greatest assets. The 6,000 streams and rivers that cascade down from the Himalaya could generate an estimated 44,000 MW of power — and the advocates of hydroelectricity within Nepal are an influential lobby group. As water resources expert Dipak Gyawali explains:

"During the oil crisis of the 1970s, Nepalis began to imagine themselves as hydro-dollar sheikhs selling power to India. It was at this time that the government began to dream of large-scale hydroelectric projects, such as the gargantuan and potentially disastrous 11,000 MW Karanali dam, which is still a gleam in its eye."

Following the recommendations of a controversial study funded and published by the World Bank in 1987 and known as the "Least Cost Generation Expansion Plan" (LCGEP), the government of Nepal and its foreign donors opted for a 402 MW run-of-river scheme³ on Nepal's second largest river, the Arun. This runs down from Tibet through the remote eastern reaches of the country between Everest and Kanchenjunga, the world's highest and third-highest peaks. Their choice relied heavily on the assumption that the scheme's high cost, some \$1.2 billion, would be offset by the Upper and Lower Arun dams, which could follow in the wake of Arun III. The LCGEP did not consider seriously the potential of smaller, cheaper, locally-built projects, taking it for granted that any scheme would be built by foreign contractors.

After the 1990 popular uprising, the new government of the Nepali Congress Party reviewed the previous *Panchayat* government's plans and policies. Several Task Forces, set up to examine the energy sector, exposed the flaws in the LCGEP and questioned the choice of the Arun project. Riding on a wave of idealistic enthusiasm, Prime Minister Girija Prasad Koirala threat-

ened to drop Arun and opt instead for the smaller, 100 MW Kali Gandaki scheme.

But the government's idealism and determination wilted under internal and external pressure, and in 1991, it reaffirmed Arun III as the chosen hydroelectricity project. Hydro-dollar dreams returned to the fore. In January 1992, a month before the donors' meeting which approved the scheme, the Water Resources Minister who had ventured to question the "vanity project" was sacked. Congress Party President Krishna Prasad Bhattarai recently stated that "Arun will enable Nepal to become like Singapore."

In February 1993, because of donor concern at Arun III's high costs, plans were modified to build the dam in two 201 MW stages, the first stage being dubbed "Baby Arun". A \$764 million aid package⁴ was drawn up to cover this stage and construction of an access road.

Nepal's "baby", however, would still be the largest single development investment ever undertaken in the country. At 201 MW, it is three times the size of the next largest hydro scheme, the 69 MW Marsyangdi, which feeds into a national grid with a working capacity of 278 MW. Baby Arun's estimated costs equal Nepal's total annual budget for government spending,⁵ making it one of the most expensive hydro schemes in the world per unit of power generated. In addition, the World Bank is insisting on a 50 per cent increase in the tariff charged to electricity consumers before approving the scheme.

Heavy Costs

It is the 122 kilometre access road to Arun III rather than the scheme itself which is likely to have the most severe environmental and social impacts. According to one Nepali NGO, the King Mahendra Trust for Nature Conservation (KMTNC), one of only two NGOs involved in the eight-year process of drawing up plans for Arun III:

"this mountainous vertical world [of the Arun valley] contains a number of climatic zones to which plants, animals and man have adapted over the millennia, producing an amazing diversity of interdependent ecological communities and cultures. Here, the biological and cultural diversity has remained largely intact due to the basin's remoteness and rugged terrain".⁶

The US Environmental Protection Agency has noted that "project documents apparently not reflected in the [World Bank's] Environmental Assessment Summary describe the staggering biodiversity of the area, which even so remains incompletely catalogued".⁷

The Environmental Assessment Summary (EAS) published by the World Bank in May 1993 skates over much of the environmental impact of the project. It devotes a few lines only

to the devastating cumulative impacts of addition of the Upper and Lower Arun dams to Arun III. For example, Upper Arun would require extending Arun III's road some 47 kilometres into even more environmentally and culturally sensitive terrain.

China has recently proposed an irrigation scheme in Tibet, where about 80 per cent of the Arun river's catchment lies, which would reduce the dry season flow of the Arun by some 50 per cent and have a serious impact on Arun III's power output. Information on this project was included in a draft EAS, but omitted in the final version. Also omitted were the results of a survey⁸ which described serious problems arising through measures to acquire land and compensate inhabitants.

As to social effects, the EAS states that:

"while roads are a prerequisite for rapid economic development, they are not sufficient to cause development by themselves. There has to be some other major economic impetus to allow roads to liberate the economic potential of an area. Where this is not present, a new road does little for the welfare of the people in its vicinity, and may bring disruption to local communities and severe damage to forests and to other natural resources due to easier access from outside".

But the EAS does not describe the nature and impact of this "other economic impetus", nor does it question assumptions about the benefits and desirability of "rapid economic development".

The EAS acknowledges that "without complementary measures", the overall food situation of the 450,000 people from ten distinct ethnic groups who live in the Arun valley "will become worse than before the road" and people will lose their jobs and livelihoods. For example, some 4,000 people work full-time as porters, while thousands more do so in the agricultural low season. Most of the valley inhabitants depend on the forests for food and fertilizer. Only eight per cent of the land is cultivated in a mixed farming system where altitude influences the crops grown.

The EAS states that "without mitigation, the project will impose severe costs on the poorest people of the Arun valley, who already live on the margin of subsistence" and that it could take 20 years for many families to climb back to their current standard of living. Already 30 per cent of households surveyed for the EAS had mortgaged their land to the richer farmers of the Brahmin and Chettri castes to meet their food needs, leading the KMTNC consultants to conclude that "9,000 families could be too poor to weather the period of economic hardship foreseen following opening of the road".

In addition, the proposed "ridge route" of the road (which would have linked a number of villages and thus gained the support of some of them) was realigned in February 1993 in favour of a "valley route", which requires extensive feeder roads and which would incur greater environmental damage, but which could be completed a year earlier. The EAS, however, considers only the "ridge route".

A government engineer recently admitted that "this is not a social sector road. It is being built as an access road to the power station and dam sites".

Skimpy Remedies

The main measure proposed in the EAS to mitigate the environmental and social effects is a Regional Action Plan (RAP), much of it based on a survey undertaken by KMTNC. The RAP sketches diverse activities such as maintaining religious sites and monuments, training in income generation and technical skills, developing ecotourism, undertaking ecological research, strengthening local institutions, monitoring nutritional levels, and setting up community forestry programmes. The US Environmental Protection Agency describes a programme to

encourage farmers to establish "multipurpose" plantings as lacking "any empirical dimension, much less any effectiveness analysis" and queries "why leasing forests for industrial forestry would 'mitigate' the effects of road construction".

The \$14.5 million budget for the RAP "band-aid" — which the government has yet to find funding for — is dismally inadequate, while KMTNC's Member Secretary Dr Chandra Gurung has pointed out that "these mitigating measures need to be started well in advance of the road construction". Yet the road is planned to be built within some three and a half years of the project going ahead. Construction of the dam itself will start before the road is finished, requiring extensive use of helicopters at an estimated cost of some \$30 million. Studies for the Arun III scheme have already cost \$25 million, provided as technical assistance funding by Germany and the World Bank.

It is very difficult for many Arun valley villagers to assess the implications of the scheme. They have little experience of development projects to draw upon, and it is doubtful whether they have been fully informed of the EAS conclusion that the scheme "will impose severe costs on the poorest people of the Arun valley," or of the World Bank's poor record at mitigating such costs.

Forging an Alternative

While negotiations for Arun III have continued largely behind closed doors, Nepali NGOs have begun to piece together information on the dam. They have questioned publicly the wisdom of Nepal embarking on such a huge project and the government's right to make a decision on it without public consultation. A small group of environmentalists, economists and hydro-engineers started the Alliance for Energy in February 1993 to publicize the Arun scheme and to persuade the government to adopt an alternative approach to hydropower development in Nepal.

They point out that the country's power needs, mainly those of urban households, industry and tourist hotels connected to the grid, are modest; even future demand, growing at about 25-30 MW per year, from these users and from the expansion of the grid to some rural areas in the south of the country could be met by smaller schemes, built at a lower cost and using Nepal's own technical and human resources. Local companies are already building schemes up to 60 MW in size at half the per kilowatt cost of the Arun scheme. Micro-hydro-engineer Bikash Pandey points out that:

"what we are most concerned about is the impact Arun will have on local initiatives. The Arun project is not even approved yet, but already other initiatives are being crowded out which could lead to the collapse of the local industry altogether. A proposal for a 6.5 MW hydroscheme put forward by Nepal Electricity Authority (NEA) engineers was turned down by the NEA board because there was no money in this year's budget for it".

Instead, 98 per cent of the 1993/94 national Nepali budget set aside for hydropower schemes, some \$17 million, was spent on the local costs of Baby Arun,⁹ while only \$200,000 went on micro-hydro schemes and \$100,000 for other schemes. The portfolio of power generation projects most recently agreed between the Nepali government and its donors comprise only large hydropower schemes, supplemented with diesel plants up to the year 2010. Small-scale projects are nowhere to be seen.¹¹

Yet the donors have stated both that they would not support Arun if it were to overshadow other initiatives or suppress local capability and that Arun III will do no such thing. In addition, Baby Arun will add \$30 or so to Nepal's \$100 per capita debt; the average annual per capita income is \$160.

Arun III, connected to Kathmandu via a 500-kilometre power line, will benefit mainly the urban elite. Only 10 per cent of

Nepal's 18 million people are connected to the national grid, one million of them in the capital. Given the country's mountainous terrain, independent mini-hydro (1-5 MW) and micro-hydro (less than 1 MW) schemes would better enable the vast majority of people — 90 per cent of the population live in rural areas — to gain access to electricity. This is increasingly needed because of pressure on other energy sources, particularly fuelwood. A 12-hour round trip to gather fuelwood is typical for many families in the hills. A 50-kilowatt scheme on a stream less than a metre wide in the dry season in the Annapurnan village of Ghandruk provides enough power for all 12 local hotels and around one-fifth of the houses to cook using heat storage cookers.

Cosy Rhetoric

The scheduled date for the submission of the Arun scheme to the World Bank's Executive Board for approval of its \$175 million loan for the project has been repeatedly postponed because of the growing opposition. But although many government ministers (including the Prime Minister) are privately in favour of the alternative approach, few concessions have been made beyond bland assurances that the World Bank "shares many of the concerns raised". At the end of February 1994, the Bank stated that:

"Bank management has concluded that the project's readiness, the availability of concessionary financing to go forward and of programmes to safeguard the environment through the period of project implementation to ensure that disadvantages are minimized and the advantages are maximized, and the interests of the affected population, tip the balance in favour of the project".¹⁰

The Alliance concludes that "all the cosy rhetoric delivered by the involved parties about developing the alternative approach alongside Arun is completely unsubstantiated".

Nevertheless, the movement for an alternative energy policy is still growing and more pressure groups have emerged. The Arun Concerned Group, which focuses on the equity and social aspects of the scheme, took the unprecedented step of taking the Nepali government to court in December 1993 over its failure to make information on Arun available to the public. This writ was closely followed by a petition from the Arun Sangharsha Samiti group from the Arun valley concerning the government's failure to consult local people or to release information on the cost/benefit analysis which justified the change from the "ridge route" to the "valley route".

"I Told You So"

Meanwhile, the World Bank is touting its handling of the Arun project as a model for its new, sensitive approach, encouraging wide public participation and serious consideration of social and environmental impacts. "Public participation", however, seems to mean asking two NGOs to suggest ways of mitigating a *fait accompli*; while the depth of the Bank's consideration for environmental and social impacts can be gauged by the fact that no financing has been allocated for their mitigation.

Trying to clean up its image in its 50th year of operation, the World Bank does not need another failure of the kind Arun III promises to be; as one of the five poorest countries in the world in terms of Gross National Product, Nepal certainly does not need it either. As Anil Chitrakar of the Alliance says:

"There is no satisfaction for us in throwing the project back in the Government's and the donors' faces ten years on and saying 'I told you so'. We have to carry on the fight now in the hope that somehow they will see the light".

Janet Bell

Janet Bell is a freelance environment and development journalist.

Notes and References

- On 30 March 1993, the government of India requested the World Bank to withdraw the remaining funds for the Sardar Sarovar Project. The strong grassroots resistance and international publicity was influential in this decision. See *The Ecologist*, Vol. 22, Nos. 2, 5, 6; Vol.23, No. 3.
- In April 1990, King Birendra was forced by popular demand to abandon his single party *Panchayat* system and introduce a multi-party system.
- In a run-of-river scheme, the turbines are turned by the strong flowing river so that a storage dam is not needed.
- Of the \$764 million, more than 60 per cent would be met by grants from bilateral donors such as Japan, Germany, Britain, France, Sweden and Finland. The two largest donors, Germany and Japan, would supply equipment and expertise. The rest of the costs would be met by a \$175 million loan from the World Bank, making Nepal's total debt to the Bank some \$850 million.
- Seventy per cent of Nepal's national budget is foreign aid, and 30 per cent is drawn from internal revenue and taxes.
- Environmental Management and Sustainable Development in the Arun Basin*, King Mahendra Trust for Nature Conservation, Kathmandu, October 1991.
- Memo from US EPA, Office of International Activities to the World Bank, 3 February 1994.
- The survey was conducted by sociologists working for the Joint Venture Group, the group within the Nepal Electricity Authority responsible for preparing the Arun III project studies and financing. The environmental assessment of the Arun project was carried out by the King Mahendra Trust for Nature Conservation as part of their brief as consultant to the World Bank.
- About 10 per cent of Baby Arun's budget is accounted for by local costs, paid for by the Nepali government and covering land compensation, the salaries of Nepali workers, and local materials such as stone and timber.
- Letter to the Alliance for Energy from Ann Hamilton, Director, Country Dept. 1, (South Asia Region), World Bank, 22 February 1994.
- Nepal Electricity Authority Investment Plan 1994-2007* in "Nepal: Arun III Hydroelectric Project", ADB/IDA Appraisal Mission, Sept-Oct 1993. Memorandum of Understanding.

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Activist Scientists

ENVIRONMENTALISM: The View from Anthropology, edited by Kay Milton, Routledge, London and New York, 1993, £14.99/\$22.50, (pb) 240pp. ISBN 0-415-09475-5.

Anthropologists frequently seem rather nervous to commit themselves to any cause for fear that it might draw them off the steady rails of scientific discourse and force them into the murky swamps of subjective opinion. Kay Milton's approach in *Environmentalism: The View from Anthropology* is a welcome antidote to such narrow academicism. In a useful and well-constructed compilation of essays, she avoids treating environmental issues simply as a new source of exotic data for the predatory anthropologist, and instead establishes a series of themes which reveal tensions within and between anthropology and environmentalism, showing the relationship between the two as a dynamic and evolving process.

The book broadly defines "environmentalism" as a social commitment stemming from the recognition that the environment — "the complex of natural phenomena with which we share the universe and on which we depend" — is affected by human activity and has to be controlled if we are to secure a viable future. This approach places everyone, anthropologists included, within the framework of the subject under study and neatly reveals the tension between observation and activism.

Several themes pervade the book. One is the way in which peoples in a variety of cultures define their relationship to the environment, both metaphorically and practically. Are indigenous peoples

"uniquely adapted in ways which ensure that the material and spiritual resources are held in balance"? Although Roy Ellen considers this to be a myth in his case study of the Nuauulu in Indonesia, denying indigenous peoples any environmental experience is equally absurd. As Paul Sillitoe writes in his essay concerning local awareness of the soil environment in the Papua New Guinean highlands:

"no matter how technically unsophisticated people may appear, or lacking in environmentalist concerns, we should not allow this to lull us into assuming that their understanding of their environment is somehow deficient".

Indigenous peoples are neither the perfect primordial environmentalists, nor are they eager to ravage the environment at the first opportunity. What we gain from *Environmentalism* is a perspective of peoples who are particularly perceptive in their observations of their environment and who in many cases express their relationship to the outside world sensitively in terms of human-based metaphors of sexual relatedness, procreation or parenthood rather than in terms of resource exploitation.

However, as Ellen demonstrates, as soon as the technological means of destroying the environment appear with the encroaching of the colonizing frontier, forest peoples can become pressured by the seduction of short-term advantages to overexploit their resources.

Another interesting perspective is the anthropological approach to Western environmentalism. Several authors consider the rise of environmentalism as a social movement and its position in official and non-official discourse.

In his survey of Canadian non-governmental organizations (NGOs), Peter Harries-Jones contrasts the "Light Green", pragmatic reformers, such as the World-wide Fund for Nature, with "Dark Green", more radical groups such as Greenpeace. The coexistence of these shades of Green demonstrates the breadth of the environmentalist movement.

Robin Grove-White and Lynda M. Warren look at the way in which the environmental movement has changed in its relation to the establishment. Grove-White shows how the co-opting of green issues by governments in the late 1980s largely ignored the experience of NGOs, thereby shifting the focus away from the NGOs' interest in peoples' concerns towards an over-reliance on the authority of

science. In the anthropological critique of science which emerges from several of the essays, scientists are seen not as neutral bodies but as of potential use to any side in an argument. Steven Yearley considers that the current challenge for green organizations is to harness scientific knowledge onto their side as a means of preventing ecological disaster, although as Warren points out, the establishment constantly refuses to anticipate the devastating effects of environmental destruction.

Niels Einarsson's fascinating article looking at environmentalism from the perspective of other cultural premises demonstrates the ease with which concern for the environment can be transformed into neo-colonial control and domination over the subsistence activities of local peoples. Environmentalists consider the activities of Icelandic fishermen as bordering on evil because they kill whales, while the fishermen see minke whales as resources to provide a basic living and cannot understand the totemic position these animals have been allocated in industrial societies. Similar points could be made about hunting for seal skin and furs by the indigenous peoples of the Arctic.

Another theme of the book is the increasing alienation many people now feel and how, through environmentalism, they seek alternative ways of looking at the world. Tanya M. Luhrmann looks at the religious trappings of neo-paganism in which people become drawn into environmentalism as a way of filling a spiritual vacuum, likening human feelings and aspirations to the natural landscape. A parallel experience in politics emerges in Giuliana B. Prato's article about political decision-making in Italy where environmental issues transcend Left-Right divisions as people feel increasing powerlessness in the face of technocratic government.

Adrian Peace's excellent account of a local campaign in Ireland to prevent a chemical factory from being built in a rural area of County Cork draws together many of these themes. By describing the different actors and their strategies in the campaign, he shows a people struggling to control their destinies in opposition to powerful political and economic interests. They find themselves pitted against a supposedly objective and independent enquiry which, insisting that witnesses express themselves in scientific terms, ignores local peoples' non-scientific opinions.

Peace's article provides a link to the final theme of the book, the extent to which anthropologists are, on the one hand, objective, and, on the other, capable of taking activist standpoints. Kay Milton concludes that these positions are compatible:

"those who have argued against the participation of anthropologists in cultural change, on the grounds that it is inconsistent with scientific 'objectivity', have, through their very arguments, *advocated* a positivistic image for the discipline and helped to privilege the discourse of science over that of morality."

Andrew Gray

Andrew Gray is a researcher with the International Work Group for Indigenous Affairs, Copenhagen, Denmark.

Choice and Contest

ECOFEMINISM by Maria Mies and Vandana Shiva, Fernwood Publications, Nova Scotia, Zed Books, London and New Jersey, Kali for Women, New Delhi, 1993, £12.95/\$19.95 (pb), 328pp. ISBN 1-85649 156 0.

Ecofeminism is shaped around choice and contest — subsistence versus development; ecofeminism versus biotechnology; free trade versus freedom for survival; freedom versus liberalization. In a series of essays based on their previous books, Maria Mies and Vandana Shiva attack the prevailing world economic system which, under the guise of offering greater freedom and choice, traps us in a self-destructive cycle of expanding production, consumption and exploitation.

The authors name the culprit — a capitalist, patriarchal world system shaped both by history and circumstance and by specific institutions and agents.

They demonstrate the workings of this system by exploring themes such as: the limitations of objective science, the myth of "catching-up development", the increasing impoverishment of women and children, the tyranny of free economies, the political vacuum created by nation states that serve to protect the interests of international capital, and the damage wreaked by biotechnology and reproductive technologies.

Seeing oppression and ecological destruction as stemming from a "world system" can have an immobilizing effect on

ordinary people. And overused pejoratives such as "capitalist" and "patriarchal" all too often tend to elicit trite defences, usually from men, of the "I'm a victim too" type.

But the ideas these terms stand for are undoubtedly useful as analytical tools to understand what is happening around us. Mies and Shiva show causal links between capitalist patriarchy and ethnic and religious fragmentation, the frustration connected with unfulfilled promises of the great "march of progress", feelings of meaninglessness and rootlessness among the "privileged" minority, and the seeming stupidity of destroying the very things that give us comfort and life.

Capitalist patriarchy not only forges worldwide divisions between, for example, "man" and nature, men and women, and production and consumption, but also enforces hierarchical dualisms — progressive or backward, universal or particular, objective or subjective. As capitalism expands into "new markets", new forms of oppression are added to old. Global freedom of capital creates servitude for local communities, and diverse possible futures are narrowed to a single one, governed by scientists, economists and heads of large corporations.

So where does patriarchy fit into this? Aside from the fact that most of the new governors are men (so were the old ones), it is a denial and devaluing of the "feminine principle" which is so damning. The authors argue that a women's perspective is nearer to the fundamental necessities of life, such as subsistence, protection, affection, understanding, identity and creation. Without this perspective, we are doomed to a life of "homelessness" where communities are dismantled and people uprooted to serve better the human resource needs of a world economy.

Bringing patriarchy into the picture does not mean that all men are unreservedly part of the problem and all women part of the solution. Patriarchy is a powerful force with powerful actors that appropriates and is appropriated by another powerful force and actors — capitalism. Women and men can try to understand and combat this waste-creating relationship without losing sight of the independence of each.

While I can readily support the authors' claim that women's views and values about production, reproduction, life and relationships have been suppressed in the public realm of parliament, board room, laboratory, war office and

university, I feel uncomfortable with their implied use of a singular "women's perspective".

Women's voices need to be heard more often and they will demonstrate some commonalities, as the voices of these two authors do. But the differences between women are as important to our understanding as the similarities. A claim that there is just one perspective of women (as is sometimes asserted for indigenous peoples or the working classes) either reduces diverse experiences and knowledge to what can be agreed upon or allows the more articulate among such groups to represent falsely their views as general. Such a claim feeds damaging stereotypes of the "all women are intuitive/patient/peace-loving" variety. Although Mies and Shiva raise this issue of difference and commonality in their introduction, a fuller discussion of why "transcendence of difference" is a better strategy than understanding difference would have been welcome.

Some of their most challenging essays tackle sacred cows. The Western feminist platform of the right to individual self-determination is shown to assume notions of selfhood and separateness from others which, having evolved from a Western historical view of emancipation, can be problematic when applied universally. Some environmentalists' dogged pursuit of a solution to overpopulation, meanwhile, is revealed as a dangerous excuse for more state control of people's, especially women's, lives.

Mies and Shiva believe there is a way out of all this: the subsistence perspective — self-sufficient, economic activity for the satisfaction of fundamental human needs based on new relationships to nature and among people, and underscored by participatory democracy. It is a vision worthy of closer attention by all of us concerned with creating real freedom and choice — not just a choice of commodities but a reshaping of our lives and our worlds. Central and essential to this are the perspectives of women who have borne the greater burden of modernization and development and have long experience of resisting and fighting oppression. Without their active involvement, leadership and advice, the structural roots of environmental destruction will never be overturned.

Pam Simmons

Pam Simmons was the guest editor of "Feminism, Nature, Development", *The Ecologist*, Vol. 22, No. 1, Jan/Feb 1992.

Chernobyl Remembered

CHERNOBYL: The Forbidden Truth, by Alla Yaroshinskaya, translated by Julia Sallabank, Jon Carpenter Publishing, Oxford, 1994, £8.99 (pb) 144pp. ISBN 1-897766-03-3.

BEYOND CHERNOBYL: Women Respond, compiled by Corin Fairburn and Janet Kenny, Envirobook, Sydney, 1993, (distributed by Jon Carpenter Publishing, Oxford,) £10.99 (pb) 240pp. ISBN 0-85881-122-7.

After eight years, our memories of the horrific accident at the Chernobyl nuclear plant in the Ukraine may be fading, but the effects have not disappeared. In the area of Chernobyl itself, action groups are fighting a continuing battle to persuade the authorities that thousands of people are suffering from radiation-related health effects ranging from blood disorders to thyroid cancer. Their struggle is made even harder by the disintegration of the country's economy and the sheer lack of resources. The West, encouraged by assertions from the International Atomic Energy Agency that many of the symptoms are psychological, has largely kept its distance, leaving overseas charities to offer medical supplies or holidays away from the contamination.

Even 1,500 miles away in the hills of Wales, farmers have been told this year that 230,000 sheep on 340 farms still cannot be taken to market without checks on their level of radioactivity. This is despite the assertion by UK government ministers at the time of the Chernobyl explosion that its effects were likely to last only "a few months".

These two books are thus timely reminders of the daily reality in the Ukraine today and the broader issues raised by the accident in April 1986.

Chernobyl: The Forbidden Truth is written by a journalist who at the time was living in Zhitomir, a town just southwest of the power station. Alla Yaroshinskaya relates her initial flight from the area with her family, her subsequent return and her persistent investigation into the "atrocities" committed in the aftermath. These include the authorities' initial failure to offer counter-measures such as iodine pills; the evacuation of whole communities from the danger zone

into areas just as contaminated with radioactivity; the persistent denial of any health effects; the unavailability of any radiation maps for years after the accident; and the attempts by the authorities to blame the disaster on the power station staff, rather than the failed technology they were struggling with.

Yaroshinskaya exposes effectively the gulf between people in the contaminated areas — mainly farming folk, fearful and isolated — and the outside "experts", whether medical or nuclear whose interventions have been so thoughtless or misleading. People have learned to believe the evidence of their own eyes — children suddenly balding and people having to eat contaminated meat — rather than bland assurances of safety; trust in the authorities has disappeared totally.

Yaroshinskaya eventually became a member of an investigating committee, trying to correct some of these injustices which she blames on a top-heavy bureaucracy unable to come to terms with the failures of its prized technology and determined to cover its tracks.

Beyond Chernobyl: Women Respond is a collection of writings by over 80 women who either experienced the accident at first hand or watched from around the world. Contributions are from women who looked at the fiery glow in the sky from a few kilometres away without realising its significance, and from pregnant women all over Europe anxious about the future for their growing babies. Combined with background explanations of the accident, the health effects of radiation, the nuclear industry and the potential for renewable energy, the book contains poems written in the immediate aftermath of the explosion, filled with images of suspicion, fear and a poisoned earth, followed by heartfelt pleas for the world to turn its back on nuclear insanity. One eyewitness writes:

"I can never manage in the depths of my consciousness truly to connect the fascinating spectacle of that sky illuminated by those enormous stars so high up, with the monstrous fungi rising from the earth, the trees that are drying up, the precociously-yellowing wheat or the rivers that are changing colour. This mixture of beauty and horror now constitutes the restlessness of my life."

There are also some reflective pieces on the scientific and gender issues which contributed to the accident. Why does a male-dominated science have to change,

refine and manipulate nature constantly in order to increase its "yield"? asks a Swedish writer. "We have seen enough of where such goals lead to be terrified of the future they promise", she concludes. An Australian physicist is more direct: "Chernobyl will not happen again if we have more women in science".

The common thread running through *Beyond Chernobyl: Women Respond* is not only that many women experienced Chernobyl particularly deeply because of their circumstances, such as their responsibility for children and for providing food, but also that their attitudes could be crucial in exploring an alternative way through the dilemma of how to harness science and technology without it spinning out of control.

Crispin Aubrey

Crispin Aubrey is author of *THORP: The Whitehall Nightmare*, Jon Carpenter Books, 1993.

A Legal Challenge

ENVIRONMENTAL LAW AND CITIZEN ACTION by Alan Murdie, Earthscan, London 1993, £11.95 (pb), 247pp. ISBN 1-85383-156-5.

The British environmental movement has been very active over the past year. Hundreds of demonstrators have been defending sites such as Twyford Down and trying to stop the extension of the M11 motorway link in the East of London in defiance of a huge government road building programme which is destroying much of the countryside. Thousands of signatures opposing the opening of the THORP nuclear reprocessing plant were submitted to the government. At the local level, many grassroots organizations have brought people together across barriers of class, age and political affiliation. But at the same time, the authorities have ignored petitions, and protesters have been arrested, fined and jailed . . . and the destruction continues. What more can people do?

Environmental Law and Citizen Action provides a concise, thorough but not overly technical guide to the intricacies of British environmental law. It is not an impenetrable legal tome for professional lawyers, but a starting point for activists to mount their own legal challenges.

In the United States, litigation has been a powerful tool for environmental activists for 20 years. In the 1970s, the Clean Air Act and the Clean Water Act were passed, and the Environmental Protection Agency (EPA) established as an official regulatory body. There has been recent debate on whether the directorship of the EPA should become a permanent cabinet position, equal in status to that of the Secretary of Defence.

But in Britain, environmental law has yet to be extensively used by ordinary citizens, although "a variety of legal areas such as pollution control, planning law and nature conservation might all be part of a wider and unified discipline that can be termed 'environmental law'". Alan Murdie points out that:

"it is only with the passing of the Environmental Protection Act [in] 1990 that this fragmented system of controls has now begun to be properly rationalized and integrated . . . The Act clearly defines which State bodies are responsible for controlling particular forms of pollution and for preventing harm to the natural environment."

Murdie emphasizes the 1990 Act as he leads the reader through a tour of British environmental law because it provides a coherent and specific legal framework within which cases concerning the environment may be addressed. He discusses gathering evidence, prosecution and possible defence tactics. He also explains just how the law can be applied to specific issues such as atmospheric and water pollution, hazardous waste, Scientific Sites of Special Interest (SSSIs), wildlife protection, development and even genetic engineering.

This is not, however, a do-it-yourself guide to the law, but a detailed overview of a complex subject. Murdie provides comprehensive lists of sources of further information, detailing how, when and who is eligible to file a legal challenge.

Those who are at the source of much of the environmental and social degradation in Britain often hide behind the law. Citizens should seize *Environmental Law and Citizen Action* and use this powerful tool to stop the juggernaut of destruction.

Richard Gifford

Richard Gifford has an MA in Environmental Philosophy from Lancaster University and is project coordinator of the Schumacher Society Lecture Service.

BOOKS DIGEST

- **FORESTS: *The Shadow of Civilization***, by Robert Pogue Harrison, The University of Chicago Press, Chicago and London, 1992, \$12.95/£10.25 (pb), 287pp. ISBN 0-226-31806-0.

"Just as forests were once everywhere in the geographical sense," writes Robert Pogue Harrison, so too they are "everywhere in the fossil record of cultural memory." Rambling through literature and forestry, science and law, philosophy and art, he explores the role forests have played in Western imaginations as the "fringe of darkness" around civilization.

- **GREEN HISTORY: *A Reader in Environmental Literature, Philosophy and Politics***, by Derek Wall, Routledge, London and New York, 1994, £12.99/\$19.95 (pb), 273pp. ISBN 0-415-07925-X.

"What good man would prefer a country covered with forests to our extensive Republic embellished with all the improvements which art can devise or industry execute?" asked US President Andrew Jackson in 1830. Derek Wall illustrates the history of the environmental debate in this excellent anthology of writings ranging from Sappho and St Augustine to Sismondi and Schumacher.

- **OGALLALA: *Water for a Dry Land***, by John Opie, University of Nebraska Press, Lincoln, 1993, \$35/£33.25 (hb), 412pp. ISBN 0-8032-3557-7.

Irrigation from the Ogallala aquifer, a vast store of underground water extending from South Dakota to Texas, has turned the Dust Bowl plains of the United States into the country's "breadbasket" — and severely depleted water reserves. This historical study looks at local and state attempts to manage and conserve groundwater, illustrating how the aquifer affects farming, food and foreign trade at local, national and international levels.

- **CLOSE TO HOME: *Women Reconnect Ecology, Health and Development***, edited by Vandana Shiva, Earthscan, London in association with Kali for Women, Delhi, (New Society Publishers, Philadelphia) 1994, £11.95/\$12.95 (pb), 170pp. ISBN 1-85383-190-5.

This volume of diverse essays covers people's perceptions of "global" environmental issues in their daily lives. Of particular interest are essays on AIDS as ecological collapse in Thailand, a campaign against sex determination in India, a critique of ecological economics, and "legal killing" with toxic waste.

- **VALUING THE EARTH: *Economics, Ecology, Ethics***, edited by Herman E Daly and Kenneth N. Townsend, The MIT Press, Cambridge, MA, 1993, \$18.95/£16.95 (pb), 387pp. ISBN 0-262-54068-1.

A collection of more than 20 classic and recent essays setting economic thinking in an ecological and ethical context, this book argues that indefinite economic growth cannot be physically, economically or morally sustained. Besides the editors, contributors include influential maverick economists Nicholas Georgescu-Roegen and Kenneth E. Boulding.

- **TIME AND MONEY: *The Making of Consumer Culture***, by Gary Cross, Routledge, London and New York, 1993, £13.99/\$22.50 (pb), 294pp. ISBN 0-415-08855-0.

Why do we never have enough money or enough time? Drawing on different experiences in the United States, Britain and France in the 1920s and 1930s, this broad historical analysis of working families' attitudes to free time and goods shows how and why mass production and new technologies create, instead of a leisure society, a work-and-spend culture with insatiable needs. It concludes with a brief assessment of possible paths to change.



Letters

Criminalizing Travellers

The travellers' issue seems to be a Trojan Horse for defending, and indeed extending, land rights established under the tyranny of a previous age in which the privatization of public space and the encroachment of droves, heaths and verges is portrayed as a socially responsible act. ("Them That Trespass Against Us", *The Ecologist*, Jan/Feb 1994)

The rhetoric justifying the oppression of travelling folk, "treating travellers like anyone else" (the classless society?) is ridiculous. Housing estates are not evicted *en masse* because of litter in the street.

There is a distinct possibility that a fair percentage of those criminalized for squatting otherwise empty houses (estimated at 50-60,000 in Britain) will come onto the road. Together with the lowering of the permissible size of encampments from 12 to 6 vehicles, this will *increase* the need for stopping places at a time when the countryside has been denuded of habitat generally.

If passed, the Criminal Justice and Public Order Bill will create more conflict than it proposes to resolve. Conservative environmental policy seems to be to isolate people from the environment and profit by this contrivance; society's need, meanwhile, is for integration and harmonization. For many, nomadism is a means for this transition.

The practice of national conservation offers the most appropriate means of discriminating the destructive from the creative, positive and perennial contributions which nomadism has and continues to make to our national culture. The restoration of traditional encampment sites will create habitats for a diversity of life, give meaningful employment and increase public amenity.

Tony Thomson

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Wells
Somerset
UK

Unreliable Animal Testing

The article describing the inadequate and possibly fraudulent testing of the sweetener Aspartame for carcinogenicity and embryotoxicity ("Sweet and Sour", *The Ecologist* March/April 1994) begs the broader issues of the unreliability of animal tests, even when they are properly conducted, and of the way in which the

results are interpreted for commercial gain.

A team of American scientists examined animal research into the sweetener, Saccharin, which causes bladder cancer in male rats. Having considered all the uncertainties, they concluded that the number of cases of bladder cancer in the US over the next 70 years due to Saccharin "might range from 0.22 to 1,144,000".¹

Two studies of carcinogenicity reinforce this uncertainty. In one study, almost half of the substances causing cancer in mice did not cause it in rats.² If the result of a test on one rodent cannot reliably be applied to another rodent, how can it be applied to a human? In another study, rats and mice were exposed to 26 chemicals *known* to cause human cancer. Fewer than half of the chemicals caused cancer in either rats or mice, the author concluding that one might as well toss a coin.³

On embryotoxicity tests, Professor R. W. Smithells, a professor of child health and a member of the Committee on Safety of Medicines, wrote, "The extensive animal reproductive studies to which all new drugs are subjected are more in the nature of a public relations exercise than a serious contribution to drug safety. Animal tests can never predict the actions of drugs in humans."⁴

While increasing cancer rates might well be related to exposure to chemical food additives and pesticide residues in food, this is difficult to investigate by epidemiology which tends to detect only fairly major risks. In addition, the susceptibility of an individual to cancer or other adverse effects in response to exposure to a chemical depends upon a multitude of factors — age, sex, body weight, nutrition, genetic factors — and exposure to other chemicals and to radiation. Testing chemicals on human cells in cell, tissue or organ cultures gives more reliable results than using animals of a different species. However, the only safe course is to avoid unnecessary exposure to chemicals. Whether artificial sweeteners are essential must be a matter of opinion.

Dr Peter Simmons
Doctors in Britain Against Animal Experiments

PO Box 302
London N8 9HD, UK

1. Wilkinson, C., *Proc. 10th International Congress of Plant Protection*, 1983, Vol. 1, p.46.
2. Di Carlo, F.J., *Drug Metabolism Reviews* 15, pp.409-413, 1984.
3. Salsburg, D., *Fundamental and Applied Toxicology* 3, pp.63-67, 1983.
4. Smithells, R.W., "Drug Teratogenicity", in Inman, W.H. (ed.), *Monitoring for Drug Safety*, MTP, Lancaster, 1980, pp.306-13.

"Safe" Exposure

I wanted to write to congratulate you on Sarah Sexton's powerful article "The Reproductive Hazards of Industrial Chemicals: The Politics of Protection" (*The Ecologist*, November/December 1993)

As Sarah Sexton points out, it is politics, and not science, that leads companies to exclude women from certain occupations. These same politics ignore health effects on women. As women's bodies are different from men's, their reactions to chemicals to which they are exposed are also different. Most of the tests conducted in the United States (according to standards which are often used elsewhere as well) to determine "safe" levels of exposure are carried out on healthy, white, middle-aged men. Not only the issue of gender but also those of health, race, age and class are not incorporated into the studies, yet each of these impacts our bodies' reactions to the chemicals to which we are exposed. The "safe" levels established put people with AIDS, people without access to adequate nutrition, older adults, children and women (especially low-income women and women of colour) at unacceptable risk. In addition, these "safe" levels do not incorporate exposure to chemicals from multiple sources, cumulative problems and synergistic effects.

We are fighting back, demanding that companies stop the exposure — a fight which not only addresses the science of the toxics themselves but the political and social reality in which people find themselves.

Triana Silton
Center for Community Action and Environmental Justice
902 Teakwood Road
Los Angeles, CA 90049, USA

DIARY DATES

June 3, 1994: **REBUILDING COMMUNITIES FOR A NEW MILLENNIUM**, 7-9pm. Schumacher Seminar with Helena Norberg-Hodge. Tickets £5. For further information, contact Neal's Yard Agency, 14 Neal's Yard, London WC2H 9DP. Tel: 071-379 0141.

June 3-4, 1994: **THE QUEST FOR JUSTICE AND COMMUNITY IN HEALTH CARE: A QUARTER CENTURY OF BIOETHICS**. The Hastings Center's 25th Anniversary Celebration. For further information, contact The Hastings Center, 255 Elm Road, Briarcliff Manor, NY 10510, USA. Tel: +1 (914) 762 8500; Fax: +1 (914) 762 2124.

June 13-14, 1994: **AT 2000: ALTERNATIVE TECHNOLOGY FOR THE 21ST CENTURY** at the Open University. For further details and registration form, contact: Horace Herring, EERU, Open University, Milton Keynes MK7 6AA, UK. Tel: 0908 654634/653335; Fax: 0908 653744.

June 25-26, 1994: 10th International Conference on **LOW LEVEL RADIATION AND HEALTH**, City Chambers, Glasgow. Conference aimed at environmental campaigners, local authorities, health workers and interested members of the public. For further information, contact: Margaret Crankshaw, 3 North Neuk, Barassie, Troon, Ayrshire KA10 6TT. Tel: 0292 316008.

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 & Development. For details, contact: IIED, 3 Endsleigh St. London WC1H 0DD, UK. Tel: +44 (071) 388 2117; Fax: +44 (071) 388 2826.

July 27-August 2, 1994: **GLOBAL YOUTH FORUM** in Brasilia. International Conference to guide youth actions on environmental issues. For more information, contact Fórum Global da Juventude Para o Meio Ambiente, Ministério do Meio Ambiente e da Amazonia Legal, Bloco B, 8th andar, Salas 846-852, Esplanada dos Ministérios, Brasilia DF70171970, BRAZIL. Tel: +55 (61) 322 3733; Fax: +55 (61) 322 3727.

July 27-31, 1994: **BIG GREEN GATHERING** including green politics arena, alternative technology, permaculture, environmental awareness in the Vale of the White Horse, between Oxford and Swindon. Admission by advance ticket only. Further details from PO Box 123(B), Salisbury, SP2 0YA, UK.

29 July, 1994: **THE FUTURE OF SUPERQUARRYING IN SCOTLAND**. For further information, contact Ellen McCance, Rural Forum, Highland House, St Catherines Road, Perth, PH1 5RY, UK. Tel: 0738 34565; Fax: 0738 38699.

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