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Cover Photo: A community health worker giving an injection of the hormonal contraceptive, Depo-Provera, in a village in Bangladesh (Mark Edwards/Still Pictures) *The Ecologist* is printed on recycled paper, whitened with hydrogen peroxide.

The Future is a Risky Business

The recently-publicized plan to reconstruct the Pentagon building according to ecological, energy-efficient principles is an outward sign of a much-heralded remodelling of the US military's image. New regulations covering the acquisition of weapon systems are now geared to "integrating environmental considerations" into assessments of their "life-cycles". Native Americans may soon be allowed access to religious and sacred sites on Department of Defense lands. The military's mighty surveillance networks are being revamped as ecological early-warning systems. What next? The reforestation of Vietnam?

In an apparently humour-free gesture, the Marine Corps introduced a new recruiting poster which shows an amphibious landing craft unloading marines onto Pendleton Beach, California. Strutting in the foreground is a Western snowy plover, a bird that made it on to the endangered species list in 1993 and whose Pendleton Beach habitat would now seem to be protected through its use by the Marines as a combat training area. In a play on the Marines' unofficial motto, "We're Looking for a Few Good Men", the poster's caption — "We're Saving a Few Good species" — captures one of the most incongruous spectacles of our times: the "greening" of the armed forces, or, from another perspective, the emergence of a military-industrial-environmental complex.

Not A Salvation Army

Since the cessation of the Cold War and the half-hearted "conversion" of the permanent war economy, and in the wake of Operation Provide Comfort in Kurdistan, Operation Sea Angel in Bangladesh, Operation Restore Hope in Somalia, Operation Uphold Democracy in Haiti and Operation Support Hope in Zaire, the US armed forces and their allies have taken on many of the public relations functions of a "healthcare provider" in their attention to operations other than war. Indeed, things have become so soft in the new peace-keeping industry that Secretary of Defense, William Perry, recently complained to Congress: "We are an army, not a Salvation Army".



Many of the military's new ventures in environmental preservation and restoration focus on its own "iatrogenic" problems - medical terminology for illnesses induced by exposure to medical institutions themselves. In common with many new developments in technoscience, the Pentagon is increasingly fighting a battle against threats generated by its own industrialization. The bill for cleaning up the military's Cold War legacy is enough to sustain a sizeable defence industry on its own; conservative clean-up estimates range from \$30 billion to \$200 billion. Others put the figure even higher. Thomas P. Grumbly, environmental supremo at the Department of Energy, who presides over the world's largest environmental budget, estimates the clean-up cost of the nuclear weapons complexes (at Hanford, Rocky Flats, Savannah River and thousands of other Department of Energy facilities) to be \$1 trillion.

The mess includes 100 million gallons of highly-radioactive waste, 66 million gallons of plutonium waste, larger volumes of low-level radioactive waste and an ocean of toxic materials such as heavy metals and hazardous chemicals. For the job of mopping up over 10,000 military sites at home and abroad, Grumbly's counterparts in each of the armed services hustle for their massive budgets with the same technorationality as they lobby for new weapons systems. As Lieutenant Colonel Sherman Forbes, chief of the air force's acquisition pollution prevention programme, shrewdly puts it, his people "are environmental managers, not environmentalists", ensuring environmental compliance in the same way as they ensure combat readiness.

"Environmental Security"

Do these developments represent an ethical awakening of the military mentality? Or are they just another PR greenwashing campaign similar to those pioneered by the giant chemical and oil companies? No one needs to believe that the Pentagon's mission is really being reshaped along humanitarian lines to see that attention to environmentalism has become a doctrinal cornerstone for the Defense establishment.

With the evaporation of the "Communist threat", the business of international security is no longer hedged by ideological values such as "free" versus "totalitarian". Increasingly, security overviews and wargame scenarios focus on the new tensions and conflicts caused by environmental "threats": shortages of natural resources including water and oil; cross-border pollution, including radioactivity and acid rain; resource degradation, and the difficulties of controlling the new migrant economy generated by economic restructuring. The mapmakers at the Central Intelligence Agency (CIA) no longer highlight military installations and intercontinental ballistic missile sites. They compile demographic maps, detailing where ethnic, national and religious groups live, and environmental maps, pinpointing sites of nuclear power plants, especially in Russia and countries of the Third World, where chances of meltdown are highest, and where plutonium smuggling originates. According to one cartographer:

"We at the agency are in the predicting business, and when we think about what will explode, demographic factors and environmental factors are what we look at first now. What policy makers want to know most from us when they ask for maps is the ethnic mix, because that is what determines the hot spots."

Many other officially non-military government agencies have followed suit. NASA now sends the space shuttle on environmental missions — its space radar equipment, designed for espionage by national security agencies, is now used to detect changes in vegetation, land movement and waterflow that could cause earthquakes and other catastrophes.

Consider too the testimony of Sherri Wasserman Goodman, in her recently-created position as Deputy Under Secretary of Defense for Environmental Security, speaking in the US Senate before a fiscal appropriations hearing of the Armed Services Subcommittee on Military Readiness and Defense Infrastructure, on 9 June 1993. In a passage that must have given Pentagon lifers the creeps (and may well provide ammunition for all the "tree-hugger" haters now in control of the House committees), she told the hearing:

"I was just down last week at Fort Bragg and I had a chance to see how the Army is doing in protecting the Red Headed Woodpecker at the base. And let me say, I think it is doing a terrific job there. It has protected the pine trees in which this bird lives. It is one of the few homes for this bird remaining. In fact, the Army now even builds homes for these birds in the trees because the bird requires three to five years to actually peck its home, and the Army goes out and builds some additional homes for it."

Goodman went on to brief this and subsequent committees on the threats to "environmental security" and the national interest. Broken down into the Pentagon's customary theatres of operation, these threats are either *global* — "ozone depletion, global warming and loss of biodiversity"; *regional* — "environmental terrorism, conflicts caused by scarcity or denial of resources and cross border or global commons contamination"; or *national* — "risks to public health and the environment from Department of Defense activities, increased restrictions on military operations, inefficient resource use, reduced weapons system performance, and erosion of public trust".

Goodman's description meshes with plans for a Strategic Environmental Initiative (a Democrat counter to Star Wars) favoured by the military's friends in the previously Democrat-controlled Congress, and with a vision of a global Marshall Plan to meet new environmental threats that was advanced in Vice-President Al Gore's 1992 book, *Earth in the Balance*. Not only were these initiatives intended to help preserve the massive research infrastructure and budget of the military and intelligence agencies; they would also provide a virtuous defence of "just" wars everywhere, and an opportunity to speak the language of free-market environmentalism, vying to become the new lingua franca of the global economy.

A Risk Society

Conceptually, "environmental security" is a strange bird, especially when invoked by corporate-military powers against threats generated by the very industrialization from which their interests have traditionally profited. Old hands at Cold War doublespeak will recognize a similar circular logic in the new rhetoric of risks. If the Cold War garrison state conducted foreign policy as if it was the dominant Most favoured is the administrative rationality known as "risk assessment", and all its related techniques in whiz-kid jargon: risk management, risk communication, risk prioritization and the like. Risk assessment, a form of cost-benefit analysis that conceals social interests in the form of mathematical possibilities, evolved as a managerial strategy to respond to the massive Cold War public anxiety about hazardous technologies. Recently, it has become the new interface language between Congress and Pentagon and Defense contractors. Both the Department of Defense's Sherri Goodman and the Department of Energy's Thomas P. Grumbly have become expert rhetoricians, rationalizing all environmental expenditure in the name of Goodman's new military rubric of "C³ P²" — cleanup, compliance, conservation and pollution prevention.

At other times, the risk calculus is used to undermine existing environmental regulation. In the process of returning military bases to productive civilian use, the stricter and non-conditional clean-up required by Superfund is being passed over in favour of standards tied to land use considerations under the 1992 Community Environmental Response Facilitation Act. Why observe environmental standards appropriate for a daycare centre when the community plans to convert the contaminated site into a parking lot? But who knows what will replace the parking lot at some future date?

Risk assessment may seem a far cry from the Cold War mathematical heyday of nuclear megadeath projections, but it is much more than a fiscal mechanism of military policymaking. The massive Republican bills on "regulatory reform" make the vast bureaucracy of risk assessment a



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budgetary requirement for the enforcement of all existing legislation relating to public health and environmental safety. These "Contract with America" bills were intended to paralyse the process of effective regulation, but were basically an upgrading of Democrat-initiated policies, whereby acceptable levels of risk (like the "maximum tolerated dose" of a toxic substance) are used to assess how many people's lives it is "permissible" to endanger before it is cost-effective to legislate.

In 1993, for example, risk assessment was used to justify a 75-year delay in dismantling the heavily-contaminated nuclear weapons production site at Hanford. It was estimated that while the natural disintegration of the reactors would result in 20 additional cancer deaths over 10,000 years, dismantling them now would result in an indefinite number of cancer deaths to workers and residents living near the facility. Waiting 75 years before beginning the clean-up, it was argued, would allow some of the radiation to decay to harmless levels — this despite the site even now being a major source of public exposure to radiation, and numerous official reports acknowledging that this exposure is likely to increase as the oldest holding-tanks built for radioactive waste give out.

The New Managers

In cases such as these, scientific rationality collides head-on with social rationality. To resolve the stand-off, the politics of economic scarcity is wheeled in and ethical quandaries are subsumed under the gospel of budgetarism that increasingly dictates the political life of government. Demands that environmentalism should pay its way are now co-extensive with

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pollution credit markets and debt-for-nature swaps, in accord with the general principle that environmental accountability should prove itself to be a *condition* for economic growth, not a *cause* of the limits to growth. Whereas many in the environmental movement once viewed it as an article of faith that capitalism could not absorb the social costs of environmental accounting and preserve its vital metabolism at one and the same time, today, the likes of Al Gore proclaim that environmentalism is not an impediment to capitalism: it is an opportunity to perfect it.

The ascendancy of risk assessment, however, affects much more than the spread of free-market environmentalism; at the level of the state, it also facilitates the classic task of "social engineering", while gutting the core of social citizenship. Through an assortment of technical appraisals, individuals and groups can be identified as social risks or threats and assigned destinies in the technostructure according to their likely level of competitiveness and social investment potential. In this manner, the "risk" to society is contained or is dispersed across society, just as the social guarantees of a welfare state have been broken down and scattered around by a highly-rationalized process managed by the huge insurance companies that dominate corporate medicine. In our medical institutions, and especially in the genetics field, this recipe for social eugenics has already been partially implemented.

Prevention of risk by any means necessary is becoming the principle of administration in a liberal society that no longer wants to assist its poor citizens nor to be perceived as visibly repressive, but needs to guarantee safe passage for its predictive capability. What does this mean for the engineering of personal identity? The ego-ideal of a risk-free, auto-immune personality with all-access security clearance to the sanitized upper levels of corporate-liberal life? What remains of the welfare state will increasingly be redefined as an institutional opportunity to protect "society" *against* the risks posed by its costly clients. Welfare institutions have a healthy future — as the nemesis, and not the guarantor, of the social democratic vision of society.

The Militarization of Greening

A prime example of the new fiscal wisdom of risk, the greening of the military, is an early model for this tendency to reformat existing institutions. "The new partnership between the Department of Defense and the Environmental Protection Agency," in Goodman's words, means that the watcher and the watched are now in bed together. The Pentagon is being touted as the ecological "steward" of 25 million acres of public land, embracing 100,000 archaeological sites and 300 listed and candidate endangered species; its Corps of Engineers is the new ecopolice, and its surveyors and cartographers are the new guardians of biological diversity.

In its attempts to identify a new global enemy in the existence of environmental "threats", the Defense establishment displays yet again its structural need for all forms of planetary life to mirror its own bellicose mentality. Risk assessment, among other things, is emerging as the new managerial language for preserving this mentality. If the Pentagon succeeds in its kinder, gentler missions, it may result not in the greening of the military but in the militarization of greening.

Andrew Ross

Andrew Ross is Professor and Director of the Program for American Studies at New York University and author of *The Chicago Gangster Theory of Life: Nature's Debt to Society.*

BSE: Madness in the Method

"It seemed that they must have agencies all over the country to hunt out old and crippled and diseased cattle to be canned. There were cattle that had been fed on 'whisky-malt', the refuse of the breweries, and had become covered in boils . . . It was stuff such as this that made the 'embalmed' beef that had killed several times as many United States soldiers as all the bullets of the Spaniards: only the army beef, besides, was not fresh canned, it was old stuff that had been lying for years in the cellars."

Upton Sinclair, The Jungle, 1906.

It is almost a hundred years since Upton Sinclair's exposé of corporate and political corruption in Chicago's meatpacking industry spurred the introduction of "pure food" legislation in the US, barring adulterated or mislabelled food from interstate commerce. Today, the meat processing industry is once again on trial — but the indictment is depressingly similar. Prevented by law and a powerful consumer protection movement from selling diseased meat directly to humans, meat processors have been laundering it via cattle, chickens, pigs and other livestock.

In Britain, this has entailed, among other barbarities, turning normally vegetarian cows into carnivores by feeding them the ground up remains of any old carcasses, including other cattle. As a result, according to government scientists, a malevolent prion that causes the brain disease "scrapie" in sheep has crossed the species barrier, first to cows (where it causes BSE — Bovine Spongiform Encephalopathy) and now apparently to humans where it is thought to be responsible for a new strain of the fatal brain condition Creutzfeldt-Jakobs' Disease. No-one knows how many people are likely to be affected in the long term, but with BSE infecting up to 10 per cent of cattle in Britain — and cattle succumbing to BSE-like symptoms in many countries where herds are officially BSE-free — the numbers *could* be huge.

Just as the scandalous disregard for public health shown by Chicago's meat moguls was symptomatic of much deeperrooted evils in 19th century US society (with the brutal working conditions of the packing yards grinding up immigrant families too "like so much raw meat") so the current epidemic of BSE in cattle — in Britain and elsewhere — is symptomatic of a much deeper crisis in contemporary agriculture. Indeed, there is no explanation for the emergence of BSE — and the feeding of diseased animals to cattle is only one of several possible causes — which is not also a searing indictment of the ideological, economic and political framework in which the food industry in particular, and other industries in general, now operate.

Regardless of public health measures, BSE was bound to happen. For the past fifty years, farmers have been under intense pressure — not least through the subsidy system, but also through the advice they received from agricultural extension services — to increase output through industrialising farm practices. In the livestock sector, the result is a production system which one commentator has called "a merry-go-round to Hell", with animals pushed to the limits of their endurance in order to produce cheap meat products.

Many farmers and consumers alike are revolted by the practices that result. Often financially stretched, however, the majority cannot afford to be squeamish. Moreover, industrialisation has so fragmented the process of food production that farmers and consumers alike can quite "rationally" deny all involvement — let alone complicity — in the barbarous practices that are done in the pursuit of "cheap food".

Few farmers produce all the feed they give to their cattle. Instead they buy it from suppliers, more often than not without any interest in what has been put into it. Likewise the majority of consumers no longer buy direct from producers, or from retailers who are known personally both to the consumer and the producer. Instead they buy from supermarkets. Who then fed cows to cows? The farmers didn't. They fed "protein supplements". The feed merchants didn't. They merely bought protein from renderers. The renderers didn't. They simply boiled up cows for sale to feed suppliers. And the consumers didn't. They merely bought the end product.

Inevitably, as the links between field and TV dinner plate become more numerous, and increasingly anonymous, so the ability of both producers and consumers to control what goes into food, or how it is produced, is diminished. The result is not only an increasingly unhealthy diet — with the poor worst affected — but the denial of any possibility for producers and consumers to negotiate in any way (except through consumer "exit") over how food is produced and thus to exert direct control over food quality.

Instead the responsibility for "negotiating" food quality has largely been seized by the most powerful interests in the food industry. Able to manipulate consumer tastes through skilful marketing and with a well-developed political and cultural infrastructure that ensures ready access to politicians, journalists and other opinion-formers, their voice is heard — and heeded — both within government and on the "independent" committees which advise government. In this intimate world where being "one of us" is a sign of objectivity, it is small wonder that "food quality" is defined on industry's terms, with industry's interests being favoured over public health, animal welfare or the environment. Small wonder too that, where it suits industry to introduce a new technology or process, "absence of evidence of harm" is equated with "evidence of absence of harm"1- or that risks that are unquantifiable are deemed to be insignificant.²

Food quality has in effect been reduced to a set of selfserving industrial codes of practice. What is acceptable or unacceptable is no longer decided through commonsense views being exchanged over the kitchen table or in the hustle and bustle of the market square: it is left to professors who enjoy the kudos of their pet theories being translated into policy, to civil servants skilled in the art of judicious wording, to corporate hacks who know what will go down well with their chief executives, and political time-servers who live in the world of opinion polls. The result is a mish-mash of regulations and counter-regulations that reflect a narrow set of interests but which bear little relation to realities in the great outdoors. But bureaucracy has replaced society; and, in the process, any practice - no matter how egregious becomes publicly acceptable so long as the "rules" are followed.

BSE is just one of the consequences of this bureaucratisation of food quality. With the first genetically-engineered foods now beginning to enter the market, other dangers loom all too clearly on the horizon. It is surely time for concerned consumers and producers to reassess what food production is really for — and who should control it.

The Editors

^{1.} Tudge, C., "Cheap Meat. Who Needs it?", Independent on Sunday, 24 March 1996.

^{2.} Gray, J., "Nature bites Back", The Guardian, 23 March 1996.

Mining the World The Global Reach of Rio Tinto Zinc

by

Roger Moody

Economic liberalization and the promotion of direct foreign investment in mineral-rich countries has proved a bonanza for multinational mining companies which are combining their forces to take most advantage of the state-owned mining assets being sold off worldwide. But to extend their global reach, such companies need to build a political infrastructure favourable to their interests, creating alliances with competitors, national governments and local power brokers. Rio Tinto Zinc is a master par excellence at parcelling up the world and what lies beneath it in this way. Understanding the complexities of how it does so is critical to pressuring the company and other multinationals.

For decades, transnational companies have dominated the mining of the earth's minerals — gold, copper, uranium, iron ore, bauxite, gems and so on — many of which are deposited in the countries of the South. Even in the 1950s and 1960s, when foreign interests were forced to cede their controlling stakes in national mining companies as newly-independent countries placed restrictions on foreign ownership, the TNCs did not disappear: they simply worked through associate companies rather than wholly-owned subsidiaries.

The economies of the South are now being reopened to mining TNCs through structural adjustment and the liberalization of the global economy. Under pressure from the IMF and World Bank, more than 70 countries have changed their mining laws to make themselves more attractive to foreign investment; foreign ownership restrictions have been watered down or abolished; and mining TNCs are being invited to bid for stateowned mining assets, as huge sections of the industry — from Brazil's national flagship CVRD, the world's biggest iron ore producer, to Zambia's copper industry — are being offered for sale under "free market" privatization programmes.

In West Africa, Guinea's Minister of Mines and Geology, recently announced plans to deregulate the country's mining laws so as to make mining "the standard bearer for foreign investment". In the Philippines, a new mining code, drafted by transnational mining companies, has been introduced which gives preferential treatment to foreign companies over national ones: they can claim blocks of land of up to 81,000 hectares in area compared with a maximum 16,000 hectares for Philippine companies. The new code also lowers environmental standards by permitting increased open pit mining, for instance, and gives companies the right to evict villagers from houses, farms or other "obstacles" to their operations.

To take advantage of all these new opportunities, large transnational mining companies are restructuring on a global scale. With restrictions on foreign ownership lifted, they are again reestablishing their outright control over local companies, creating a global industry which is more similar to the regime that existed in "the old days".¹

In addition, there has been a spate of mergers in the past few years as companies seek to extend their global reach — by combining forces, they can take most advantage of the assets now being privatized. Between June 1993 and October 1995, Gencor, the South African mining conglomerate, took over the mining giant, Billiton, from Royal Dutch Shell; US companies Cyprus and Amax merged their operations; and Australian Normandy Poseidon took over most of the state-owned French mining group, BRGM. Chief executive of the Australian mining group, BHP Minerals, Jerry Ellis, predicts that the mining industry in the twenty-first century "is likely to be dominated by a relatively small number of companies that will be truly global in scope and internationally staffed."²

The World's Largest Miner

Foremost amongst these global giants is unquestionably Britain's Rio Tinto Zinc (RTZ). With more than 200 subsidiaries in over 40 countries, RTZ is the epitome of the global mining corporation. Although 79 per cent of its assets are in North America, Australia and New Zealand,³ there is no continent (with the possible exception of Antarctica) where RTZ has not established its presence — whether it be selling iron ore to the Chinese state steel corporation; gouging out copper from the world's biggest human-made hole in Utah; running gold mines and nickel matte and ferrochrome plants in Zimbabwe; earning rich pickings from its Palabora copper and uranium mine in the South African Transvaal; or dredging the titanium-rich sands along the coast of Natal.

Formed in 1962 through a merger of the British company, Rio Tinto and the Australian company, Consolidated Zinc, RTZ — which has never recorded an annual loss — is the world's largest private producer of uranium and one of the global top ten miners of bauxite, iron ore and copper. It delivers more than a third of the world's gem and industrial diamonds from just one Australian mine.⁴

Roger Moody is author of *The Gulliver File: Mines, People and Land — A Global Battleground*, International Books, 1993.



Mining tin ore in the Brazilian Amazon. Mining companies have long exploited the mineral resources of countries of the South. Now such resources are being offered to them cheap under "free market" privatization programmes.

In 1985, ever quick to exploit the new opportunities which "liberalization" was throwing up, RTZ bought a 30 per cent stake in Chile's massive Escondida copper mine when it was privatized by the Pinochet government. Four years later, in what was then the biggest inter-corporate deal ever signed in Britain, it acquired all the mining interests of British Petroleum — with the exception of one coal mine in Indonesia. The deal catapulted RTZ to the forefront of global production of titanium dioxide, almost doubled its copper reserves, and overnight made the company a major player in gold — primarily through the acquisition of the Lihir island deposit in Papua New Guinea, estimated to be the world's most valuable gold resource outside South Africa and the Russian Federation.

In 1995, it formed a partnership with Freeport Copper and Gold, the giant US mining corporation, to expand Freeport's notorious mining operations in West Papua (Indonesian Irian Jaya). Most recently, in December 1995, after the Australian government modified its stance on foreign takeovers, RTZ merged its operations and management with Conzinc Riotinto of Australia (CRA), its 49 per cent-owned Australian associate, to create a single corporate entity with assets of £9 billion and a combined market capitalization of well over £14 billion. The RTZ-CRA combine is now seeking to expand in India, the Pacific and Latin America.

A Political Infrastructure

Today, RTZ-CRA is not only the biggest mining conglomerate in the world; it is also the most globally extended. One reason for its success undoubtedly lies in the diversity of its mining operations — from gold, borax, coal and copper to lead, silver, tin, uranium and zinc. Such diversity allows the company to weather cyclical downturns in the market for specific minerals that would bankrupt more specialized concerns.

But its unrivalled position cannot be explained by product diversity alone. Its global reach owes as much to its political contacts and its ability to overcome opposition as it does to its commercial acumen. From its birth in 1873 as the Rio Tinto Company to its rebirth as RTZ-CRA, the company has long recognized that the key to being successful on a global scale lies in having influence at national and local levels.

The history of RTZ is thus the history of a worldwide political infrastructure consisting of alliances between RTZ and its potential competitors; between the company and national governments; and between the company and power brokers within the local communities where it operates.

Corporate Alliances

Strategic alliances between "rival" companies have played a major role in RTZ's success since the Rio Tinto Company was founded in 1872 by a Scot, Hugh Jardine Matheson, to mine copper in Spain. In its first years of operation, the company spun enormous profits out of its Andalusian copper mines on the backs of thousands of women, children and men, paid starvation wages,⁵ and by manipulating the burgeoning London stock market. Before the end of the 1880s, the company had helped to form the Secretan "copper corner" (cartel) and 40 years later, under the chairmanship of Sir Auckland Geddes, it sealed a pact with its most formidable potential opponent, South Africa's Anglo-American Corporation, led by Sir Ernest Oppenheimer. The two companies started their partnership by wiping out lesser shareholders in the newly-formed Rhokana Corporation, thus gaining control over the fabulously wealthy northern Rhodesian (now Zimbabwean) copper belt.6 By 1926, Anglo-American and Rio Tinto, together with Belgium's Union Miniere and US companies Asarco and Kennecott, had cornered the world's main sources of copper through the commodity cartel, Copper Exporters Incorporated.

The alliance with Anglo-American not only took Rio Tinto into Africa; it also ensured that whenever the interests of two of the world's major mining companies seemed to be at loggerheads, one of them would more or less gracefully bow out or strike a deal with the other. This alliance persisted well past Rio's transformation into Rio Tinto Zinc. In the late 1970s when RTZ began exploiting the world's largest diamond deposits on

Aboriginal land in Western Australia, the company - through its subsidiary, CRA - linked up with Ashton Mining to lobby against Australian government attempts to keep control of the deposit in Australian hands and to set up a national cutting industry (which would ensure that most of the "added value" remained within Australia). RTZ won the fight hands down. What many Australians did not realise - until it was too late was that Ashton Mining, on paper an Australian company, was a subsidiary of the Malaysian Mining Corporation - and MMC has long been controlled by Anglo-American. For the past 10 years, around 90 per cent of the entire output of the Argyle mine in Western Australia has gone to Anglo-American/De Beers Central Selling Organization, enormously strengthening its hold over global diamond sales.7

In the late 1980s, investigations revealed further evidence of a tie-up between Anglo-American and RTZ, this time "toll refining" subsidiaries, Incontra AG and Centametall AG. Set up in 1984 by RTZ and Anglo-American and head-

quartered in the tiny Swiss town of Zug,8 Incontra and Centametall handled copper and nickel from Zimbabwe, ostensibly bidding for contracts at a fair market price. In practice, the two subsidiaries were charging their parent companies in Zimbabwe Bindura Nickel and Empress Nickel - rock bottom prices, the difference between the declared price and the actual receipts enriching RTZ and Anglo-American at the expense of the Zimbabwean government.9

Shadow Cabinets

In addition to absorbing its competitors, equally important to RTZ's success as a global conglomerate have been the political links it has nurtured with politicians at home and abroad.

As Val Duncan, chair of the company from 1954 to 1974 and mastermind of the amalgamation between Rio Tinto and Consolidated Zinc, once commented, "We are very politically minded, not party politically minded, but on an international basis".10 Duncan was determined to bring into the company representatives of the British establishment and of all three major political parties - and he succeeded. By the early 1980s, RTZ's board boasted Lord Charteris (the Queen's private secretary), Lord Byers (secretary to the Liberal Party), Lord Shackleton (Labour leader in the House of Lords) and Lord Carrington - who, as Conservative foreign secretary, forged the 1979 Lancaster House settlement of the Smith rebellion in Rhodesia and ensured that RTZ's Rhodesian assets were not disturbed, let alone appropriated, by the new Zimbabwean government. No wonder The Times once mused that it was "almost patriotic" to own shares in RTZ.11 Unlike many other British multinationals, RTZ has never given donations to any British political party - it has not needed to.

RTZ's high-level contacts played a major role in securing British government support for the company's defiance of UN sanctions against South Africa's apartheid regime, enabling RTZ to continue operating its giant Rossing uranium mine in Namibia in the teeth of countless UN resolutions condemning its presence as apartheid's main economic prop in the territory.

Close links also exist between the company and politicians abroad. By sharing some of its wealth with those in a position to help them, RTZ, its subsidiaries and its partners maintain an extraordinary capacity to influence domestic power brokers in the regions where they operate. When, for example, Conalco (a joint company set up by RTZ and the US corporation, Kaiser Aluminium, to exploit the Weipa bauxite mine in North Australia) was publicly floated in 1970, only 10 per cent of its shares were offered to the Australian public. A significant proportion of the remaining shares were offered in secret the day before the public floatation to those in high office in Queensland - the State Treasurer; the Ministers of Aboriginal Affairs, Industrial Development, and Local Government and Electricity; and the

Premier of Western Australia.

The Acting Premier of Queens-

ticians saw the value of their

"Rio Tinto Zinc has long recognized land, Gordon Chalk, distributed his ill-gotten gains to his that the key to being successful on a entire family, leading one jourinvolving transfer pricing by two global scale lies in having influence at nalist to comment that "only the dog" had failed to benefit. national and local levels." RTZ shares skyrocketed upon public floatation and the poli-

investments double in a day.12

No national government would seem immune to RTZ's influence. In the United States, the company has repeatedly used its well-connected lobbying network to overcome opposition to its operations. The case of US Borax, an RTZ subsidiary, is illustrative. In the late 1970s, the company located a massive molybdenum deposit at its Quartz Hill site in Alaska. To RTZ/ Borax, the find promised a "valuable diversification into a market where prices have continued to rise even during recession." But the deposit lay in an area which had recently been designated as inviolable under the Misty Fjords National Monument Act. Despite opposition to exploration from the Sierra Club, Representative Morris Udall, and President Carter himself, RTZ/Borax mounted a well-funded lobby of Congress, arguing that its exploration of the deposit was "in the national interest". By December 1980, the company had prevailed: the Alaska National Interest Lands Conservation Act was passed, allowing RTZ/Borax to mine in the world's largest national park.

Even while Congress was legislating exceptions for RTZ/ Borax, a Congressional investigation was citing RTZ and several subsidiaries as prime movers in a world uranium cartel whose contract and price-fixing operations in the early 1970s boosted the mark-up five times over for "free world" supplies of yellowcake (uranium oxide).13 The company's masterminding of the cartel, euphemistically dubbed the "Uranium Producers' Club" by its members, consolidated and extended RTZ's influence over key government personnel in South Africa, Canada and Australia - all major uranium producing countries. Indeed, the company sat as an equal among representatives of sovereign states - leading Stephen Ritterbush, then an adviser to the White House, to declare at a United Nations' Hearing on Namibian Uranium in 1980: "Rio Tinto Zinc is in the position of acting in many respects as a uranium producing and exporting nation."14

Today, the company continues to act in many instances as if it were a national government. In the early 1980s, RTZ's lawyer in Panama declared that, if the country's pro-Union labour law got in the way of exploiting the huge Cerro Colorado copper

Problems Everywhere . .

"Some companies feel they have severe problems domestically with such things as permits and with indigenous communities . . . They are beginning to feel that these things might be better outside their home bases . . . But they are being naive about how easy it is to operate in someone else's back yard. We at RTZ see problems virtually everywhere".

> Robert Wilson RTZ's Chief Executive Financial Times, 10 October 1995

... West Papua

Viewed by RTZ-CRA as the "most exciting" new minerals region in the world, West Papua (Indonesian Irian Jaya) has one major mine: the Grasberg copper-gold mine operated by Freeport McMoran of the US. RTZ is investing nearly two billion dollars — in Freeport itself (12 per cent of which it now owns); in expanding the Grasberg mine; and in further exploration. In return, RTZ gets 40 per cent of what is mined from new areas.

For more than 20 years, Freeport's mining has been vehemently opposed by the indigenous peoples of West Papua, in particular by the Amungme who have borne the brunt of land expropriation, the huge influx of outsiders (outnumbering them six to one) and devastating pollution.

In 1995, the US government's Overseas Private Investment Corporation (OPIC) withdrew its political risk insurance cover because tailings from the Grasberg mine have "severely degraded the rainforests surrounding the Ajikwa and Minajerwi Rivers", creating "unreasonable, or major environmental, health or safety hazards".

Three other official reports have confirmed allegations that the army has committed major human rights abuses of local people in the mining area, using facilities (transport, security posts and containers for imprisonment) provided by Freeport/RTZ.

In March this year, Amungme, Dani and Kamoro demonstrators closed the mine for three days in protest at continued denial of their indigenous culture and rights.

RTZ's response to criticism has been, first, to deny flatly allegations of social or environmental abuse and then, more recently, to maintain they have little or no responsibility for such abuses.

... United States

The Bingham Canyon copper smelter leads the world, according to RTZ, with its newly-installed sulphur reduction technology. The mine itself, however, has long been indicted by workers and environmentalists for exceptional incidences of dustborne disease and contamination of groundwater. Three years ago, the US Environmental Protection Agency told RTZ to agree to Superfund designation of the site which would compel the company to clean it up within a certain time-limit. Defying the EPA, RTZ maintains it can clean-up more effectively without government interference.

. . Namibia

Three years ago, RTZ's majority-owned Rossing uranium mine was declared by the International Atomic Energy Agency to be the best of its kind in the world. However, the Mineworkers Union maintains that hundreds of workers now suffer from lung diseases and cancers caused by appalling conditions in the years 1976-1982 when RTZ was rushing to fulfil nuclear contracts. One of these former workers, Edward Connelly, has been trying to sue the company for compensation in Britain, but RTZ says the case must be heard in Namibia, knowing that Connelly will not receive adequate legal aid there and is too ill to travel. The Guardian commented in February 1996 that RTZ "intends to continue doing all it can to stop the courts considering the claim, quite probably leaving its former employee to die in destitution".

... Czech Republic

Close to the banks of Bohemia's Vltava river lies a large gold deposit which RTZ has been prospecting for nearly two years. Local people, especially the villagers of Mkrosko, are adamantly opposed to the mining, fearing that it will pollute their land and water. After vigorous campaigning, RTZ has been told to pack its bags by virtually all the regional local authorities, supported by the minister of the environment.

... Bougainville, PNG

The island of Bougainville has been ruined by nearly seven years of civil war, provoked by operations at the Panguna copper-gold mine which devastated the rainforest, wiped out all life from the Jaba river and silted the Empress Augusta bay to a depth of 30 metres. After their compensation demands were rejected, local landowners attacked the mine in 1988, forcing it to close several months later.

The PNG government sent in troops and imposed a food and medical blockade which has cost the lives of thousands of Bougainvilleans (mostly women and children). In December 1995, CRA chair John Uhrig declared: "The war on Bougainville has nothing to do with the Panguna copper mine. It is an intertribal intervillage problem. Some of the natives have darker skin and fuzzier hair while the others have less fuzzy hair and brown skin".

Although the PNG government has re-established control over most of Bougainville, the local landowners say that they will never permit the mine to re-open.

... Lihir, Papua New Guinea

The tiny island of Lihir contains one of the world's largest unexploited gold deposits. The ore is located deep underground in a semi-dormant volcano; millions of tonnes of earth and rock will have to be removed to extract it. RTZ claims there is nowhere on the island to put the wastes which will therefore be piped onto the seabed over 30 years or more.

The company admits that the mine will destroy the most revered religious site on this Pacific island, culturally significant hot springs, graveyards and the breeding grounds of Melanesian Scrubfowl, losses which it describes as "an unavoidable consequence of the project".

Some 64 per cent of the ore will be stockpiled for future use. This will cause run-off of heavy metals straight into the ocean. Run-off from construction and operations will also "reduce the diversity of coral species and fish".

A washwater process is supposed to detoxify at least 90 per cent of the minimum 89 million tonnes of toxic tailings produced. But the free cyanide concentration is expected to exceed the national limit.

"There may be potential for bioaccumulation of metals within the marine ecosystem over time" admits the company but it has rejected routine seawater testing as "inefficient ... and expensive". deposit, situated on the territory of the Guyami Indians, "We'll get rid of the law!"¹⁵ Fifteen years later, this threat has become a reality in countries such as Papua New Guinea and Argentina where RTZ lawyers — and the RTZ-sponsored Centre for Petroleum and Mineral Law and Policy, based in Dundee, Scotland — are drawing up new mining legislation so as to entice foreign direct investment.

Capturing the Local

Besides national level alliances, RTZ is assiduous in cultivating the "right" contacts at the local level too. Indeed, without local support, the company would be unable to operate. As chief executive of RTZ, Bob Wilson, recently told the *Financial Times*, "Some companies are being naive about how easy

it is to operate in someone else's back-yard. We [at RTZ] see problems virtually everywhere."¹⁶One means of securing local support, in the words of Derek Birkin, RTZ's current chairperson, is "to encourage local loyalties".¹⁷ As far as possible, RTZ's companies are thus managed by nationals of the country concerned. "Most do

not even have RTZ in their name". This supposed devolution is, in crucial respects, a pretence. "London" is ready to intervene whenever the company's core mining assets appear threatened.

Such a corporate structure has served the company well, enabling it to insert itself into local political structures as an apparent insider. By presenting itself as a local company defending local jobs and local interests, it has been able — time and again — to divide and rule its opponents. In Ladysmith, Wisconsin, for example, residents opposed to the company's Flambeau Copper Mine, which opened three years ago, have been consistently portrayed by RTZ as "outsiders", whilst the company is portrayed as a long-serving friend of Ladysmith, in tune with its needs and customs. As an open letter from the company, published in the *Flambeau News* (significantly, a company newssheet) says, opponents of the mine "may not appreciate how we normally conduct ourselves here in Ladysmith."¹⁸

In Minas de Oro, Honduras, the Kennecott corporation, wholly-owned by RTZ, went to elaborate efforts to put a local gloss on its plans to prospect for gold by setting up a regional office, taking out full-page adverts in the Spanish-speaking press and showing specially-tailored videos to the *campesinos*. When physician Dr Wilfredo Sandoval came to London in 1993 to campaign against the company's plans, RTZ chair Derek Birkin publicly portrayed him as an "outsider" who did not enjoy the confidence of local residents. Sandoval was in fact born in Minas de Oro and works in a town ouside the area so as to provide better surgical facilities for the community.

Its tactics are not always successful, however. Under pressure two years ago from Sami reindeer herders in northern Scandinavia, RTZ offered a million kroner to the regional arts board for a festival. One of the Sami artists due to appear was outraged at being associated with the corporate-engineered event and publicly castigated RTZ for the "bribe". The arts board turned down the money.

From the Iron Fist to the Velvet Glove

Overcoming opposition has long been a preoccupation of the company, even if that involves employing violence. In the 1930s, strikes at Rio Tinto's mines in Heulva, Andalusia, were brutally suppressed by General Franco's regime; the chair of the company reported approvingly to shareholders in 1937 that "miners found guilty of troublemaking are court-martialled and shot." When local people protested in 1993 at pollution caused by CRA's Kelian gold mine in east Kalimantan, Indonesia, they were bundled into a company helicopter and carted off to the local police station, where one later died.¹⁹

Dealing with "troublemakers" is now usually more velvetgloved. In the 1970s and 1980s Namibian Mineworkers' Union activists at the Rossing mine were dismissed rather than handed over to the South African armed forces, as had happened before

(although at least one was forced to flee the country).

ably anonymous London headquar-

ters in St James Square - there is

not even a name plaque outside to

indicate the company or business

transacted within its walls - no

The employees at RTZ's suit-

"Believing that multinationals are invincible monoliths may marginalize people's movements."

> longer publicly threaten their critics. Whereas in 1981 one RTZ director said he would "crush Survival International like a fly" if the tribal peoples' support organization did not call off its campaign against the Cerro Colorado mine in Panama, today the company invites its detractors to lunch. When Friends of the Earth in 1995 vehemently condemned RTZ's plans to exploit mineral sands in rainforested south-eastern Madagascar, the environmental organization was invited by company chair Derek Birkin "to be part of the process of appraising our plans, at some future stage".²⁰

Sleeping with the Enemy?

For many environment and development lobbies, such invitations represent real concessions. Surely, they argue, it is encouraging that companies like RTZ should be talking to its opponents and playing a leading role in international initiatives such as the UN's Council for Sustainable Development?²¹

But others (myself included) are more sceptical. As someone who first became a shareholder in RTZ in 1979 so as to raise issues on behalf of Aboriginal communities at the company's annual general meeting and who has followed the company ever since — as far afield as Kalimantan, Australia, the United States, New Zealand and the Philippines — I believe such changes of response to its critics are more apparent than actual.

Activists seeking to influence the policies and operations of multinational corporations invariably face two main dangers. The first is to believe that these vast institutions, based primarily on increasing shareholder "wealth", through aggressive monopolization, cost cutting and exploitation of unrenewable resources, can be amenable to democratic pressures. The second is to believe that they cannot.

In the first instance, opponents easily become drawn into discussion with corporate bodies to approve new technologies, sophisticated environmental monitoring or token community participation. (It is no accident that some of the largest corporate funders of "green" neighbourhood projects in Britain are Shell, BP and RTZ — the three companies most responsible for causing social and environmental havoc overseas.)

In the second, believing that multinational corporations are invincible monoliths which are simply too powerful to oppose, let alone influence, not only saps the strength from peoples' movements but may marginalize them, particularly when it comes to realignments of political power.

In Australia, for example, most Aboriginal land councils had no power either to accept or reject mining on Aboriginal land. By presenting themselves as "reasonable" partners in national development, however, they have been able to shift the white ruling caucus in the direction of minimal land rights. While continuing to be critical of mining,



Two Aboriginal activists, Teddy Bicjabu and Brian Samson, came to London in 1988 to tell RTZ to get off their land at Rudall river in Western Australia where the company was prospecting for uranium. To date, the communities have managed to keep RTZ-CRA at bay.

they are now willing to sign deals with exploration companies. No change would have been won if they had eschewed all contact with the companies.

Yet activists must be careful to distinguish between cosmetic changes on the part of transnationals and structural ones which lead to more democratic rights or sustainable futures. In the late 1980s, RTZ was Europe's second largest producer of ozonedepleting chlorofluorocarbons (CFCs). When challenged on this by shareholders, backed by Friends of the Earth, the company could only bluster. "The evidence produced by NASA is inconclusive" declared the company's then chair, Sir Alistair Frame, at the company's AGM in 1989 in the face of overwhelming evidence to the contrary. Within a year, however, RTZ (admitting privately that it "had been made to squirm") had sold all its interests in chemicals, including CFCs. But the sale was a pyrrhic victory for environmentalists: the buyer was Rhone Poulenc of France and the deal helped to make it the world's largest producer of proprietary chemicals, including HCFCs - hardly an improvement.

By contrast, it could be argued that another campaign, mounted in 1991 by Ecuadorean NGOs Arcoiris and Accion Ecologica and supported by British environmentalists, secured at least the promise of fundamental change. RTZ had been prospecting, primarily for gold, in Ecuador's Podocarpus National Park one of Latin America's most biodiverse sanctuaries. Stung by criticisms from outside and inside the country, the company declared that it would not "knowingly" explore or mine in national parks. This was no doubt a deliberate wordplay: Ecuador has few designated national parks, but many "bosque protectors" (protected forests) and several reserves, whose status is in dispute between the Agrarian Ministry and the Ministry of Mines. As Accion Ecologica revealed in 1994, RTZ had concessions in perhaps six of these protected forests. When this was publicized in late 1994, RTZ announced its withdrawal from one such concession, and appears not to have carried out further work within the others (although it has not actually withdrawn its licences).

Multinational Realities

Balancing on the high wire between naive over-optimism about corporate willingness to change and profound pessimism that any re-direction is possible at all is an accomplished act. Most of us do not attempt it, with the result that transnationals get discounted as legitimate campaign objectives, or activists settle for short-term gains (demanding "Shell out of Ogoniland!" for example) which, however necessary, still leave corporate power intact elsewhere.

In the process, several crucial realities get overlooked. First, the principle of control over human and natural resources becomes subtly, but inexorably, ceded to multinationals at the expense of local communities and regional or national selfdevelopment agendas. Once we agree that transnationals should harvest food, minerals, services or other people's labour, it becomes difficult, if not impossible, to dispute their "right" to choose what they exploit, at what rate and from which areas of the world. A local community - be it in the Philippines or Indonesia — is thus no longer able to assert its right to ancestral domain, even if the state constitution supposedly guarantees it. Instead, the community has to argue its case before international forums (such as the United Nations Human Rights Commission or UNDP) or within transnational institutions (such as regional development banks or the World Bank), which are often structurally unsuited to such representation. It is like having to travel to New York to buy a ticket for a rickshaw in Calcutta.

Second, a partial (or, for that matter, impartial) view of multinationals prevents us seeing just how vigorously they have been parcelling up our world, and what lies on or beneath its surface. It is not just that transnationals shift capital and labour at will around the world, targeting cheap pools of both. (In fact, some mining companies pay their workforce higher than average wages, as a security against trade union activity and sudden, costly withdrawals of labour). The complexities of finding "fits" between markets and resources, of meeting escalating transport costs, of fluctuating exchange rates — these and other factors compel transnationals to try to gain control of as many political-economic variables as possible.

Third — and closely linked with the above — no campaign at any level for social and economic justice can succeed by targeting national governments or in-

ter-governmental bureaucratic structures, such as the World Bank, the International Finance Corporation, the World Trade Organization or the Global Environment Facility, while neglecting the ways in which transnationals have sought to shape and influence these pseudo-democratic institutions. It is their interests which lie at the heart of the neo-liberalizing of Southern-based economies and the rejection of "protectionism" (except where it suits them in which case protection is promoted as "free trade"). Little wonder that leading the pack in the early 1990s for British acceptance of the Uruguay round of GATT was RTZ. Little wonder that when the Business Council for Sustainable Development intervened at UNCED, it not only constituted a veritable roll call of powerful multinationals, but quickly achieved one major objective: the disbanding of the United Nations Center on Transnational Corporations, which had been close to promulgating a code of conduct on transnational corporations.

Sustaining Exploitation

For these and other reasons, activists are right to be wary when companies such as RTZ embrace environmentalism and start talking the language of "dialogue" and "sustainable development". For the reality is that transnationals, with unequalled financial and political power at their disposal, are moving from a post-war agenda of controlling resources and markets to an agenda of determining quasi-universal values to which people should adhere, and increased levels of exploitation needed to sustain them.

Their promises are chimeras. If today's mining industry cannot even finance the clean-up of mining wastes from the recent past (which US experience of the Superfund has shown to be true), what chance is there of its safeguarding future

"Activists must distinguish between cosmetic and structural changes."

generations against the even bigger wastes it is now planning to create? And, since only a minuscule fraction of shareholders in any of RTZ's companies actually come from the communities where they operate, what steps are being taken to redress the

balance? The answer is: virtually none. The multinational corporation does not spread around its wealth; on the contrary it concentrates it.

Yet, massive internal contradictions do exist within these apparently complacent edifices. RTZ has been the most adept of all mining companies at finding new sources of traditional metals. But traditional metals will not necessarily always be in demand. Once the current economic "boom" (powered especially by the rise of market capitalism on the part of the Asian "tigers") turns towards bust, or global metals supply and demand move towards balance, substitute materials for shelter, construction and transport, or far higher premiums placed on recycling, could drain new investment from older extractive industries. RTZ has shown itself ill-suited to diversification outside of mining and its willingness to finance recycling plants is severely constrained by its determination to bring new mines continually on stream.

Even if the cyclical downturn in consumption did not occur, RTZ would still be faced by one overwhelming dilemma. The new deposits it covets are increasingly to be found in "frontier" areas — such as northern Russia, Laos, Kalimantan, West Papua and Samiland — many of whose indigenous inhabitants understand the threat posed by large-scale mining and are enlisting rising global consciousness of their natural and territorial rights. Already, the company has seen one of its most important projects, the Panguna mine on Bougainville, closed down by local militants, who went on to foment a full-scale nationalist guerilla war. Soon RTZ will either have to recognize the full force of indigenous rights (as promulgated in ILO Convention 169 and the draft Declaration of the United Nations Working Group on Indigenous Peoples) or withdraw from these areas. Neither solution will be palatable; whichever is chosen, RTZ

will have to change, cosmetically or fundamentally.

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- Roberts, J., Massacres to Mining, Dove Communications, Blackburn, Victoria, 1981. Anglo-American and De Beers are controlled by the Oppenheimers through cross-shareholdings between both companies.
- 8. Zug is Europe's most notorious sanctuary for "front" companies. In the same town, for many years, RTZ's own secretive subsidiary, RTZ Mineral Services, laundered contracts for

Namibian uranium destined for Japan specifically through Marubeni. The Japanese parliament had expressly forbidden such trade as a violation of sanctions against South Africa. The contracts were not revoked until Japanese and British researchers exposed the true role of RTZ Mineral Services.

9. Pallister, D., Stewart, S. and Lepper, I., South Africa Inc: The Story of the Oppenheimer Empire, Corgi Books, London 1988. This was not the only, or even the most flagrant example of transfer pricing practised by RTZ. During the 1970s, RTZ's aluminium subsidiary, Comalso operator of the world's biggest single bauxite mine carved out of purloined Aboriginal land on Australia's Cape York peninsula - sold bauxite at rock bottom prices to its Hong Kong subsidiary. The Chinese company then sold it to Japan's Showa Denko and Sumitomo Chemical at a hefty profit. The bauxite never touched Hong Kong, nor could the Australian government touch most of the profits. See Roberts. J. and McClean, D., The Mapoon Books, Volume 3, IDA, Melbourne, 1976.

- Moody, R., "Rio Tinto Zinc: The British Mining Monster", *Multinational Monitor*, April 1990, p.26.
- One calculated result was to justify the development of RTZ's Rossing mine, whose lowgrade refractory ore had not previously been considered profitable.
- 14. Financial Times, 27 September 1979.
- 15. Bennett, G., Testimony to the 1981 International
- Tribunal on RTZ, London 1981. 16. Gooding, K., "Rich Seam for Foreign Investors",
- Financial Times, 12 October 1995.
 17. Quoted in Moody, R., Plunder!, Partizans/ CAFCA, London, 1991, p.10.
- 18 Under-Mining the Principles? Measuring the Performance of RTZ Corporation plc., ECCR, 11 Burnham Wood, Fareham, Hants, 1994, p.20.
- 19. Down to Earth and Partizans, "We only eat dust!': Report on the activities of RTZ and CRA at the Kelian gold Mine", Down to Earth and Partizans, Special Report, London 1994.
- Paraphrased statement by Sir Derek Birkin at RTZ's Annual General Meeting, 10 May 1995.
- 21. RTZ was one of the few corporations to participate in the March 1995 meeting of the UN Council for Sustainable Development.

^{10.} The Times, London, 16 December 1968.

^{11.} Ibid.

"Vaccination" Against Pregnancy The Politics of Contraceptive Research

by

Judith Richter

For the past 25 years, scientists have been developing a new class of birth control methods immuno-contraceptives, also known as an anti-fertility "vaccines" — which aim to turn the body's immune system against reproductive components. Immuno-contraceptives are already being heralded as a breakthrough in contraceptive research, although it is debatable whether they will ever be sufficiently effective as a contraceptive. From what is known about immune responses in general, however, immuno-contraceptives are likely to be unreliable as far as an individual is concerned and to entail an unprecedented potential for abuse; severe health risks cannot be discounted. Anti-fertility "vaccines" are thus a clear example of the impact "population control" has had on contraceptive research.

"The research conducted during the past two decades has brought us to the threshold of making available a new method for more effectively meeting the challenge of ever-increasing population expansion." Vernon Stevens

originator of WHO's anti-fertility "vaccine"

"[The development of immuno-contraceptives is] asking unnecessarily for trouble . . . Whatever risks there are can hardly be predicted in any test. But what we know of physiology suggests that they could be very serious."²

Graham N. Dukes, Editor International Journal of Risk and Safety in Medicine

Since the 1970s, several medical research institutions have been developing a totally new class of birth control methods — immuno-contraceptives, also known as anti-fertility "vaccines".³ They aim to induce the body's immune system to act against reproductive components so as to prevent pregnancy. The idea dates from the turn of the century: experiments conducted independently by three leading immunologists, Austrian Karl Landsteiner and Russians Elie Metchnikoff and Sergei Metalnikoff, indicated that injection of sperm or testes' extracts into animals could cause the generation of anti-bodies against sperm.⁴ Some scientists went on to investigate possible immunological causes of existing infertility while others, in "a wave of Malthusian fervour", began to develop ways of actually inducing it.⁵

At least 12 studies into immuno-contraception were carried out in women in the 1920s and 1930s, but a discouraging evaluation report concerning the method's effectiveness in 1939 and unspecified "ethical restrictions" brought research to a halt.⁶

Three decades later, new immunological techniques and a favourable funding climate enabled the interrupted endeavour to be resumed. Today, the bulk of research into various immuno-

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contraceptives is being coordinated by five major institutions around the world — the National Institute of Immunology in India; the World Health Organization in Switzerland; and the Population Council, the Contraceptive Research and Development Program, and the National Institute for Child Health and Development in the United States.⁷ In theory, immuno-contraceptives could act in men and women, but so far most research has been directed towards versions which act in women.

None of the current prototypes has gone beyond the second of three trial stages in humans while some research is still at the laboratory stage. Yet anti-fertility "vaccines" are already being portrayed as a breakthrough in contraceptive research. According to the World Health Organization's research coordinator, David Griffin, "the vaccine may prove as important a development in birth control as the contraceptive pill",⁸ while immunologist N. Avrion Mitchison maintains that "it is now generally accepted that vaccines will come to be used for the control of fertility".⁹

The Immune System

Most descriptions of the body's immune system — a complex collection of interacting cells, molecules and tissues — focus on how it acts to ward off illness and disease. Its success in doing so depends primarily on two features: its ability to generate antibodies specific to each type of micro-organism — viruses, bacteria and fungi, for instance — and its "memory".¹⁰ Once the immune system has encountered a micro-organism, it "remembers" it and generates a faster and stronger immune response every time it subsequently encounters it.

Few people realise, however, that besides "foreign" microorganisms, the immune system also "recognizes" cells and molecules of our bodies themselves; it can differentiate between these "self" antigens (an antigen is any material which the immune system recognizes) and "non-self" ones. It "learns" to eliminate or neutralize the foreign ones with anti-bodies, but not to react against healthy self antigens. This protection of a person's own body constituents against immune reactions is called self-tolerance. If self-tolerance fails, immune reactions against specific body components may cause auto-immune diseases. Juvenile diabetes, for instance, is thought to be caused by immune reactions against the insulin-secreting cells of the pancreas.¹¹

Our immune system also tolerates the many components essential for reproduction. A woman's immune system does not usually consider a man's sperm, for example, as foreign nor a fertilized egg or fetus as "half-foreign", even though half its genetic material comes from the man.¹² If it did, the human species would no doubt have become extinct long ago. Some immunologists therefore classify sperm, embryos and fetuses as "self-like" to indicate that they habitually enjoy immune self-tolerance.

Immunological Birth Control

An immuno-contraceptive aims to trick the immune system into generating a temporary immune reaction against those cells or molecules essential to reproduction — namely, the hormones that trigger the monthly ripening and release of egg cells in women or the continuous production of sperm in men; the egg or sperm cells themselves; or pregnancy-related hormones.

To make the chosen reproductive constituent — the target antigen — appear "foreign" to the immune system, researchers have linked it to a foreign carrier such as the diphtheria or tetanus toxoid used in vaccinations against these diseases.¹³ The principle is to administer the combination of reproductive antigen and carrier so that a person's immune system learns to react against the naturally-occurring reproductive component as if it were a micro-organism to be eliminated.

The most advanced immuno-contraceptive research has been carried out by the World Health Organization, the National Institute of Immunology in India and the New York-based Population Council into inducing the immune system to act against the hormone hCG (human chorionic gonadotropin). hCG is secreted by the early embryo shortly after an ovum has been fertilized. Its effect is to keep a woman's ovaries producing another hormone, progesterone, which causes the lining of the uterus to stay in its thickened state so that the embryo can implant itself. If hCG were to be intercepted by anti-bodies, progesterone levels would drop — as usually happens if the egg is not fertilized — and the lining of the uterus would shed; the embryo would not be able to implant and the woman would have a menstrual-like period.

Can It Be Done?

This all sounds simple, but designing an immuno-contraceptive has proved to be not quite so easy. Indeed, immuno-contraceptives are a totally new class of contraceptive¹⁴ and a complete novelty in terms of vaccine technology.

One of the few similarities between immuno-contraceptives and anti-disease vaccines is that the action of both is mediated by the immune system. But whereas anti-disease vaccines aim at long-term (preferably lifelong) immunization against foreign micro-organisms, immuno-contraceptives aim for a highlyeffective immunization against human cells or molecules which should be reversible after a predictable length of time.

A first difficulty has been to immunize against a reproductive component so that a sufficiently high contraceptive effect is achieved. USAID official Jeff Spieler has cautioned that "a fertility regulating vaccine . . . would have to produce and sustain effective immunity in at least 95 per cent of the vaccinated population, a level of protection rarely achieved even with the most successful viral and bacterial vaccines"¹⁵ because of genetic differences between people.

According to WHO researchers David Griffin and Warren Jones, "the annual pregnancy rate associated with the use of the vaccine should not exceed two per cent, similar to the most effective methods already in use".¹⁶

But raising the immune response against a reproductive component so that it prevents pregnancy effectively runs the risk of inducing unintended immune-mediated reactions elsewhere in the body.

As far as the immune system is concerned, if the target antigen is similar to other cells or hormones in the body, the immune response will be induced not only against the reproductive component but also against these other body components. For example, the pregnancy hormone, hCG, is immunologically similar to a range of hormones produced by the pituitary gland at the base of the brain, a fact that was known when research into anti-hCG contraceptives began. If the whole hCG molecule was used as the target antigen, immune reactions would also be induced against two reproductive hormones, FSH (follicle stimulating hormone) and LH (luteinizing hormone) and against TSH (thyroid stimulating hormone). Cross-reactions against these hormones could interfere with the functioning of the thyroid and potentially cause long-term damage to the pituitary and thyroid glands.

To avoid these cross-reactions, the research teams have taken just a small part of the hCG molecule as the target antigen, but have then found that contraceptive effectiveness dropped.¹⁷The anti-hCG prototype developed by the Indian National Institute of Immunology, the only immuno-contraceptive to date which has been tested in fertile women for its effectiveness, induced an anti-hCG reaction in 80 per cent of the women in the trial for an average of three months.¹⁸

A major tension in immuno-contraceptive research has therefore been to find a target antigen such that the immune system does not generate immune cross-reactions yet still generates sufficient anti-bodies to prevent pregnancy. The smaller the inducing antigen is, the less likely such cross-reactions may be — but also the less likely that immune responses will prevent pregnancy.

Another potential problem relates to the target antigen's other functions in the body (besides its reproductive function) which could also be disrupted by induced immune responses. The National Institute of Immunology and the Population Council have tested a product which targets GnRH (gonadotropin releasing hormone)¹⁹ a hormone which regulates the production of oestrogen and progesterone in women and testosterone in men. Its neutralization could cause men to lose their low voices and body hair and to become impotent, a "side effect" which researchers propose to counter by administering synthetic testosterone derivatives.²⁰

Meanwhile, in trying to develop an immuno-contraceptive to act against a mature egg cell, researchers have found it difficult to identify a cell structure on the surface of the mature egg which is not also present on immature eggs within the ovaries. Any immune response against a structure present in both could affect all the egg cells, making a woman permanently infertile. Immune reactions against sperm in the testes could cause chronic inflammation of the testes which ultimately leads to infertility. Opinions are thus divided among the research community as to whether immunocontraception is actually feasible. Some maintain that it is still too early to conclude that it is not; they claim that new vaccine technology, such as more specific target antigens, could solve most problems and that the final products are likely to differ substantially from the prototypes now being tested in animals and humans.²¹ Others, however, are more doubtful. As David Hamilton, a researcher in male contraception at the University of Minnesota, says:

"Doesn't the inherent problem remain — that we are immunizing against body constituents and that this may cause auto-immunity? . . . I am very sceptical that immunization against body constituents would ever work without side-effects."²²

A User-Centred Perspective

Although still under development, the characteristics of an immuno-contraceptive can

be extrapolated from what is known about the immune system in general and body responses to anti-disease vaccination, and from information gathered from animal and human trials to date. These characteristics indicate that, even if the "perfect" target antigen could be isolated, immuno-contraception would still pose several problems for an individual user because "the immune system does not operate in isolation. This is one of its cardinal features".²³ Its complex, interconnected functioning depends on a plethora of factors both internal and external to the body.

As far as an individual user is concerned, a contraceptive should reliably prevent pregnancy; the health of any baby born after contraceptive use should not be affected, nor that of any baby born if the method fails; the contraceptive effect should be reversible; and the method should pose no short- or long-term risks to the user's health or well-being.²⁴

Reliability

In theory, after a "model" immuno-contraceptive had been administered, the body should build up its immune response to the target antigen until it had generated enough anti-bodies to prevent pregnancy — the "anti-fertility threshold". Until that time, another highly-reliable and effective contraceptive which did not interact with the action of the immuno-contraceptive would have to be used to prevent pregnancy.

Once the anti-fertility threshold had been reached, the level of anti-bodies should be sufficient to prevent pregnancy for a predictable amount of time, after which it should decrease and drop below the threshold unless a booster injection is given.

However, immune responses vary considerably between individuals, depending on their genetic make-up, nutrition and health. It will be difficult to predict the duration of the lag and contraceptive phases for any one individual. In some people, the anti-body level might not reach the anti-fertility threshold at all, while in others, it might reach it for only a short time before it started to drop. The immune response of those with a predisposition to allergic or auto-immune diseases may never go into the waning phase, making them indefinitely infertile.



Patients at a clinic in western Zambia. Widespread promotion of injectable immuno-contraceptives could increase the spread of HIV via unsterile needles and the undermining of public health campaigns to encourage condom use. They could also, however, deter people from using healthcare services. Rumours about "abortifacient vaccines" have already led people to refuse tetanus immunizations in India, the Philippines, Tanzania, Mexico, Peru and Bolivia.

Any disturbance of the immune system — for instance, as a result of malnutrition, stress, or diseases which suppress the immune system such as malaria, tuberculosis or HIV — could cause the anti-body level to drop unexpectedly below the anti-fertility threshold. In practice, a woman would not know whether the anti-bodies were sufficient to prevent pregnancy unless she had a blood test.

The initial lag period,²⁵ the variability and lack of predictability of immune responses are not technical flaws which can be ironed out simply by adjusting the formula or finding the "perfect" target antigen. They are basic characteristics of the immune system which mean that immuno-contraceptives would probably be highly unreliable in preventing pregnancy as far as an individual was concerned.

Effects on a Baby

Because the action of an immuno-contraceptive would be unreliable and unpredictable, some women who received an immunocontraceptive would be highly likely to become pregnant, and there would be a high risk of fetal exposure to ongoing immune reactions. The consequences of such exposure are as yet unknown and would depend on the reproductive component targeted by an immuno-contraceptive: damage could include various visible malformations and less apparent hormonal abnormalities (some of which might manifest themselves only at puberty).²⁶

It is also unknown whether anti-bodies produced from immuno-contraceptives pass into breast milk and, if so, what effects they might have on a baby. Yet WHO's consultant Warren Jones believes that immuno-contraceptives would be "ideal" for breastfeeding women in Third World villages.²⁷

Reversibility

With a vaccine against a disease, the duration of the induced immune response does not need to be exact; the longer the immunological memory, the better. The disease-preventing effect is prolonged not only when immunized persons receive a "booster" injection of the vaccine but also when they come into contact with the diseasecausing micro-organism itself.

To act as a contraceptive rather than a sterilizant, however, the immune response generated by an immuno-contraceptive should *not* be boosted when the immune system encounters the naturally-occurring reproductive component. "As long as immuno-contraceptives are percieved as 'vaccines' against pregnancy epidemics, or as 'weapons' in the family planning 'armamentarium', the well-being of individuals using them is likely to remain a lesser priority." they cite instead the advantages of long-action, low risk of "user failure", ease of administration, low cost and widespread appeal because of the general popularity of vaccination³² — characteristics which, from the perspective of an individual user, are of doubtful value, if not a liability, but which, from the perspective of "population control", may well

If it is, the person may become permanently infertile.

This risk depends partially on the target antigen. Anti-hCG immuno-contraceptives have been reported in trials to be reversible, while in the case of immunization in women against sperm, some scientists are concerned that frequent exposure to sperm during sexual intercourse could prolong the effects of the anti-sperm immunization indefinitely.²⁸

For the research community, however, reversibility does not seem to be a critical characteristic of an immuno-contraceptive. WHO's consultant Warren Jones stated in 1982 that "the capability of reversal is an attractive but not essential facet of any contraceptive method" while the Population Council maintains that "irreversibility . . . is not always an adverse effect; some vaccines may be designed to be used as non-surgical means of sterilization."²⁹

Health Risks

Apart from potential auto-immune diseases induced by crossreactions, an immuno-contraceptive might also cause allergies or immune-complex diseases and might interfere with or exacerbate existing diseases and immune-disturbances, a risk of any vaccination. Immuno-contraceptives may, for instance, increase the risk for people infected with hepatitis B of developing chronic liver disease. This includes those who do not show any symptoms of the disease, an estimated 5-10 per cent of the population in many African and Asian countries.³⁰

It would be too impractical and expensive for most healthcare systems, particularly those being dismantled as a result of structural adjustment programmes, to test people for diseases such as HIV and hepatitis B or to define and identify persons genetically predisposed to auto-immune diseases to ensure that they did not receive an immuno-contraceptive.

Potential health risks for woman and fetus are compounded by the fact that immune reactions cannot just be "switched off". In the case of severe adverse effects, drugs might have to be given to suppress the immune system, curtailing healthy as well as adverse immune reactions.

A Population Framework

Given immuno-contraceptives' predictable unreliability and probable low method effectiveness,³¹ the relatively high risk of fetal exposure to ongoing immune responses and the difficulty of discontinuing immune responses at will, the potential risks involved in interfering with the immune system seem hard to justify, particularly since other contraceptive methods are available.

Researchers have not, in fact, focused on the reliability of immuno-contraceptives as far as an individual is concerned;

appear as advantages. As Australian immunologist A. Basten said in 1988 after the first clinical trial in humans of WHO's product:

"Fertility-regulating vaccines offer the most practical way of controlling the birth rate, particularly in developing countries."³³

A conceptual framework underscored by a preoccupation with "overpopulation" does not mean that those engaged in contraceptive research and family planning *intend* to disregard people's health and well-being. Many and closely-spaced pregnancies can certainly be detrimental to women, and mainstream family planning organizations include people who regard contraceptives as a means of decreasing maternal mortality and those whose major focus is women's self-determination.

But they also include many who see methods of birth control primarily as tools of population control, in particular, of the population growth rates of certain groups of people — poorer people, non-whites and those from Third World countries. Within this conceptual framework, birth control is regarded as a weapon of war against the "teeming multitudes", a war in which people are treated as mere numbers or statistics to be controlled, manipulated, reduced and dispensed with.³⁴

When Pran Talwar, the leading immuno-contraceptive researcher at the Indian National Institute of Immunology was interviewed about his motivation and zeal during human trials of one of his formulations, his explanation was simple:

"Well, you just have to go, for example, to Bombay, or to any other metropolis for that reason; at the time that the offices close; see this sea of humanity that flows; trains are overloaded, buses are overloaded, everything is overloaded. The population stress is expressing itself in many walks of life. I would even say that several of our political problems — the uneasiness of the youth, the uncertainties of getting jobs . . . — are all caused by this problem of too large numbers looking for too few places. I would even say that the terrorist problem is related in a way to the population problem and the social strain that it is causing — the inability of the structure to cope with the numbers."³⁵

Similarly, Executive Health Officer Kathuria of India's Bombay-based Population Project 5 is clear as to who the targets of birth control methods should be:

"this class of people — especially in the slums — who have four and five children ... They are spoiling the demographic pattern of Bombay and India."³⁶

As long as immuno-contraceptives are perceived as "vaccines" against pregnancy epidemics or as "antigenic weapons"³⁷ in the "family planning armamentarium",³⁸ the well-being of individuals using the contraceptive is likely to remain a lesser priority.

Contraceptive Abuse

Modern reliable contraceptives have certainly made it easier for women (and men) not to have children for a while but still to have sexual intercourse. Many of them, however, have also made it easier for powerful social actors to attempt to control certain women's fertility so that they do not have "too many" children, irrespective of their wishes.



Argentinian women's health advocate Mabel Bianco considers abuse of birth control methods to be:

"any instance in which a method is

imposed upon a person or in which a person in induced to use a particular method in a way that the decision is not the result of free and informed choice".

Thus besides administering a contraceptive against someone's will or without their knowledge, abuse can also take more subtle forms:

- providing financial incentives to encourage "preference" for a particular method;
- giving biased information about a method, such as emphasizing its effectiveness while playing down or not mentioning its adverse effects;
- implementing sanctions against non-users;
- refusing to remove a contraceptive when the user requests.

Much of the biomedical and family planning literature attributes such abuse (when it is acknowledged) to "overzealous" providers (without considering why they are "overzealous"), portraying the contraceptives themselves as neutral. But as social scientist Judy Wajcman points out, social forces determine what contraceptives technologies are available (or not available) — and available birth control methods in turn shape our life "choices" in both technical and social terms.

The actual abuse of a particular contraceptive thus depends on the specific socio-political and cultural context in which it is introduced *and* on its technology-inherent features. A contraceptive's potential for abuse can be assessed by aggregating the duration of the anti-fertility effect; the possibility for users to stop this effect when they wish; and whether it is a barrier device, pill, injection, implant or intrauterine device (IUD).

The longer the action of a method, the more easily it can be administered on a mass scale and given without people's knowledge, and the more easily its "acceptability" can be engineered to increase its use, the higher the risk that it will be abused. It is difficult, for instance, to imagine abuse of barrier methods. As Maggie Helwig of the Coalition for East Timor said in

concluding her description of soldiers rounding up women from East Timorese villages so that the implant, Norplant®, could be inserted: "You can't force a guy to use a condom at gunpoint".

Of the various hormonal contraceptive methods, the Pill has little potential for abuse because the action of a single tablet lasts for one day only and a woman can stop taking it at any time. The effects of injectable hormonal contraceptives, however, last for one to three months and cannot be reversed during this time; injectables therefore have a higher abuse potential.

Hormone-releasing vaginal rings, currently under development, will be effective for three or six months, but a woman can remove them by herself any time she wants. So although injectables and vaginal rings have a comparable duration of action, they have a profoundly different abuse potential because of a different degree of user control.

The implant, Norplant®, acts for five years and is regarded by its developer, the Population Council, as being a means of temporary sterilization. When it was introduced, women were told that its effects could be stopped whenever they wished. In theory, this is true; in practice, Norplant® needs the cooperation of a health– care provider to remove it surgically. Women have often had difficulties in getting the implant removed before the end of its five-year contraceptive duration, not only in countries with "demographically-driven" population programmes but also in countries such as Britain and the United States.

Beyond Control

Contraceptive methods developed in a "population" framework also tend to lend themselves to abuse. The longer the action of a method, the more difficult it is for someone to discontinue this action and the more easily a method can be promoted and administered on a mass scale without people's knowledge or informed consent, the higher the risk that it will be abused.

If a contraceptive's potential for abuse is defined as technology-inherent features which increase the likelihood of uninformed, disinformed and coercive administration of a birth control method, the abuse potential of anti-fertility "vaccines" puts them way beyond any social means of preventing or containing such abuse.

The aim of immuno-contraceptive research is to develop a relatively long-acting method; the anti-hCG versions, for instance, are designed to act for one to two years, while anti-sperm immunization in women might act for life. Immuno-contraceptives could easily be administered on a mass scale with or without a person's knowledge or consent because their delivery system will be an injection, pill or drinking liquid. Even relatively complicated procedures such as IUD insertion and sterilization have been carried out without women's knowledge, for example, immediately after a woman has given birth or under general anaesthesia when she may not be fully aware of what is happening around her, or during a routine gynaecological check-up. With immuno-contraceptives, there would be no need to wait for such occasions; they could be given whenever someone requested or agreed to an injection or pill for the treatment or prevention of a disease.

The research community has emphasized the acceptability and popularity of vaccines in general as a significant factor in facilitating the introduction of immuno-contraceptives³⁹ — it is also a factor in exacerbating the method's abuse potential. The use of the vaccine metaphor obscures profound differences between the two technologies: vaccines stimulate normal im-

Choice? What Choice? Whose Choice?

Several individuals and groups, in particular those concerned with women's health and rights, have been apprehensive for some time now about the development of immuno-contraceptives. In 1987, women's groups in Brazil initiated the collection of 10,000 signatures, including 300 scientists, opposing the Population Council's proposed testing of its anti-hCG "vaccine" in the country — the trial was subsequently abandoned.

Concern has now developed into concerted international action. In 1993, a wide-ranging group of women's and health activists drafted a petition calling for an immediate stop to all research on immunological contraceptives and a radical reorientation of contraceptive research.

The petition — a Call for a Stop of Research on Antifertility "Vaccines" (Immunological Contraceptives) expresses concern about the method's abuse potential, questions the legitimacy of manipulating the immune system for contraceptive purposes given the distinct lack of advantages but significant potential risks of the method, and draws attention to specific problems in the clinical trials that have taken place so far. It criticizes the shaping of contraceptive research by population ideology and a narrow scientific framework.

By June 1995, over 430 groups and organizations from 39 countries had signed the petition, ranging from a multitude of women's organizations and health groups to human rights and consumer action groups, from alternative development policy groups to aid agencies, from student associations to workers' unions.

Most of the research institutions and a few funders of immuno-contraceptive research have responded to the petition. One of the most pervasive characteristics of their responses is the assurance that they are fervent supporters of "free and informed choice" for women in the matter of reproduction. The president of the Population Council, Margaret Catley-Carson, asserted that:

"The Population Council is dedicated to advancing the reproductive health of women . . . We develop contraceptives to enable women and men to regulate their own fertility in accordance with their own goals."

The Director of WHO's Human Reproduction Programme, Giuseppe Banagiano, wrote:

"I agree completely with . . . the 'right of women to decide whether, when and how to have children'. It is, however, my contention that this . . . also includes the right of women to choose what method of family planning to use, including, if they wish, an antifertility vaccine."

It would be easy to conclude from these statements that anyone concerned about the contraceptive "vaccine" is against women's choice. Yet women's health advocates have repeatedly emphasized that increasing the number of methods available does not automatically lead to expanded choice. Choices are shaped by what is available and the power to choose. As community health researchers Rani and Abjay Bang report from India:

"In reality, the choice of contraceptive methods is not made by women. The decision is actually often made by the government health programme officials and workers."

Increasing reproductive "choice" cannot be understood as the right of research institutions to develop whatever they consider to be attractive and feasible, nor should it be seen as a "choice" between immuno-contraceptives of different durations while a prior issue is excluded: should certain technologies be developed at all? Annette Will of the German group, BUKO Pharma-Kampagne, points out that:

"The introduction of one more family planning method does not give people more or less freedom to choose but more or less things to choose from. Nobody deprives women of the freedom to choose when one objects to one or more (bad) contraceptives to choose from. Furthermore, more choice has no meaning in itself, what is important is the question: more choice of what? ... Reproductive self-determination ... is not a question of developing another control device, but it is a complex social and political issue that affects men and women differently."

Many critics of immuno-contraceptives feel that this debate is of critical importance. The Call for a Stop maintains that the aim of contraceptive development should not be population control but:

"to enable people — particularly women — to exert greater control over their fertility without sacrificing their integrity, health and well-being. Contraceptive development must be oriented at the realities of women's lives. Above all it must consider local health care conditions and the position of women in society."

The "vaccines" are still some years away from being approved by drug regulatory authorities. Annette Will says that:

"We must not postpone reflecting and evaluating a new technology in all its potential consequences to a later point of time. History teaches us that there is no such thing as a neutral technology or a neutral science. Scientific research is always carried out within a social, political, religious, cultural and economic framework . . . The leading questions are: Why are immunological contraceptives being developed? For whom are they meant? By whom are they researched? Who has which interest in the development of immunological contraceptives? What will they do to women and men? How are they going to influence people's health, dignity and integrity?"

In 1995, the coordinator of WHO's research on immunocontraceptives, David Griffin, stated that he would stop the research if potential users said they did not want immunocontraceptives. Campaigners are therefore urging anyone concerned about the method to register their disquiet with WHO on a postcard. As the Forum for Women's Health in Bombay, a group which has grown out of campaigns against prenatal sex-determination, stresses:

"The campaign against antifertility vaccines is . . . not merely a women's issue as issues of contraceptives have so far been seen . . . It is an issue of human relations, of the whole understanding of what is development and the meaning of progress in science and technology."

For a copy of the petition, pre-printed postcards and more information on the Stop Anti-Fertility "Vaccines" campaign, contact the office of the international campaign coordinator: Women's Global Network for Reproductive Rights (WGNRR), NZ Voorburgwal 32, 1012 RZ Amsterdam, THE NETHERLANDS. Fax: +31 (20) 622 2450. Write to (please copy to WGNRR): David Griffin, Task Force on Vaccines for Fertility Regulation, Human Reproduction Programme, World Health Organization, 1211 Geneva 27, SWITZERLAND. mune responses to ward off diseases, whereas immuno-contraceptives induce a particular immune disorder, namely (immunological) infertility. Pregnancy is a natural and healthy process, not a disease and even less an epidemic, while the fetus is not a harmful germ invading the body. Ironically, the widespread introduction of immuno-contraceptives may cause people to lose any trust they have not only in family planning services but also in healthcare systems; they could no longer be sure what an injection or pill was actually for, but would no doubt be aware that the effects of immunizations cannot just be switched off.

Stop Research

Some contraceptive researchers may not see a conflict of interest between developing contraceptives to limit population growth and to meet women's needs or enhance people's reproductive rights.⁴⁰

But as this analysis of immuno-contraceptives has shown, a contraceptive assessment centred on reducing birth rates is very different from assessments concerned with the integrity, dignity and well-being of individual users. It is questionable whether birth control methods can be de-

signed and provided in such a way so as to meet the goals of both simultaneously. Without addressing the impact of a population framework on the contraceptives which have been developed and made available, meeting women's needs so as to meet (even unspoken and unspecified) demographic targets is, at most, a shift from "hard" to "soft" population control.⁴¹

Some contraceptive developers see anti-fertility "vaccines" as "an unprecedented effective instrument for demographic control".⁴² Because of their technology-inherent features and



At the May 1994 World Health Assembly, the annual meeting of the World Health Organization in Geneva, women's groups performed street theatre depicting the realities of contraception for many women worldwide. Large banners called on the WHO to stop research into anti-fertility "vaccines".

given the history of population control, I see them as contraceptives with an unprecedented potential for abuse. Such potential is reason enough to call for an immediate stop to this line of research.

This article is an edited extract of *Vaccination Against Pregnancy: Miracle or Menace?* by Judith Richter, Zed Books, London and New Jersey, 1996, ISBN 1-85649-282-6, £10.95/\$17.50 (Spinifex Press, Melbourne, ISBN 1-875559-57-4)

Notes and References

- Stevens, V.C., "Current status of antifertility vaccines using gonadotropin immunogens", *Immunology Today*, Vol. 7, No. 12, 1986, p.374.
- 2. Dukes, G.N., letter to the author, 24 January 1995.
- 3. I refer to these birth control methods under development as "immunocontraceptives" rather than "vaccines", as the research community calls them, because they differ in significant ways from vaccines against diseases. However, Indian women's rights activists Swatija Paranjape and Chayanika Shah have said that they would "continue to call it the 'anti-fertility vaccine'. . We feel that the basic assumption behind the development of this contraceptive is an understanding of fertility as a disease — a communicable one at that! It is considered to be an epidemic in the context of the poor marginalized women all over the world. The name that [the researchers] have given highlights their mentality in producing it."
- See Katsh, S., "Immunology, fertility and infertility: A historical survey", *American Journal of Obstetrics and Gynecology*, Vol. 77, No.5, 1959, p.947.
- Jones, W.R., Immunological Fertility Regulation, Blackwell Scientific Publications, Oxford, 1982, p.9.
- See ibid and Clarke, A., Disciplining Reproduction: Modernity, American Life Sciences and the Problem of Sex, University of California (forthcoming)
- 7. The research at WHO is coordinated by the Special Programme or Research, Development and Research Training in Human Reproduction (HRP). Funders include the World Bank, the United Nations Fund for Population Activities (UNFPA), the United Nations Development Programme (UNDP), the Rockefeller Foundation, the US Agency for International Development (USAID), the International Development and Research Center (IDRC, Canada) and the governments of Germany, Britain, India, Norway, Sweden and the US. Immuno-contraceptives are also being researched by several

smaller research teams at the Indian Institute for Science in Bangalore; the Reproductive Biology Unit at the University of Edinburgh, Scotland; and Institut Gustave Roussy, France.

- World Health Organization, "First human trial of birth control vaccine begins in Australia", WHO press release, Geneva, 17 February 1986.
- Mitchison, N.A., "Lessons learned and future needs", in Alexander, N.J. et al., Gamete Interaction: Prospects for Immuno-Contraception, Wiley-Lyss, New York, 1990, p.607.
- 10. In fact, the immune system's functioning and interactions with other body systems are not fully understood. I use a simplified, mechanistic model of the immune system to describe how immuno-contraceptives are designed to work. The mechanistic, molecular model is, however, just one way of describing the immune system. For critiques of this model, see Haraway, D.J., "The biopolitics of postmodern bodies: constitutions of self in immune system discourse" in Haraway, D.J., Simians, Cyborgs and Women: The Reinvention of Nature, Free Association Books, London, 1991 and Martin, E., Flexible Bodies: Tracking Immunity in American Culture From the Days of Polio to the Age of AIDS, Beacon Press, Boston, 1994.
- Auto-immune diseases tend to be more frequent and more severe in women than in men. See Playfair, J.H.L., *Immunology at a Glance*, Blackwell Scientific Publications, Oxford, 1989 (4th edition), p.33.
- 12. In some people, however, the immune system does react against hormones, cells or other body secretions indispensable for human reproduction. Immune factors are thought to play a role in many early miscarriages. Some women and men also generate spontaneous antibodies to sperm.
- 13. A toxoid is a version of a disease-causing toxin which has been altered so that when a person is vaccinated with it, the toxoid stimulates the immune

response against the toxin but does not cause the disease. If a person subsequently encounters the disease-causing toxin, the primed immune system reacts quickly and vigorously to it.

- 14. Existing reversible methods of birth control fall into three main classes: barrier methods (male and female condoms, diaphragm); intra-uterine devices (IUDs); and hormonal contraceptives (Pill, injectables, implants). In contrast to hormonal contraceptives, the active principle of immuno-contraceptives is not what is injected into the body but what is produced by the body in response to the administered substance.
- 15. Spieler, J., "Development of immunological methods for fertility regulation", Bulletin of the World Health Organization, Vol. 65, 1987, p.779. The effectiveness of anti-disease vaccines depends not only on the vaccine's action in an individual but also on the proportion of people in a given population who are immunized. If a vaccine induces an immune response in the majority of people, those who have not been vaccinated or who have weaker immune responses are still protected because it is harder for the disease to gain a foothold in the population and thus such people are less likely to be exposed to the disease. Thus it has never been necessary to develop anti-disease vaccines which are 100 per cent effective (or nearly so) in an individual.
- Griffin, P.D. & Jones, W.R., "The preliminary clinical evaluation of the safety and efficacy of a fertility regulating vaccine", *Statistics in Medicine*, Vol. 10, 1991, p.188.
- 17. The hormone hCG and the related FSH, LH and TSH hormones are composed of two sub-units: a short alpha unit and a longer beta unit. The alpha sub-unit is virtually identical in all four hormones, but hCG's beta sub-unit is similar only to the beta sub-unit of LH. In addition, the hCG beta sub-unit has a small end section of 37 amino acids — a carboxyterminal peptide (CTP) — which is not found on the other hormones. WHO's anti-hCG immuno-contraceptive research has been directed at this small end peptide, the most unique and distinct part of the hormone molecule, to avoid the risk of potential cross reactions with other hormones.

The Population Council and the National Institute of Immunology, however, opted for the whole hCG beta sub-unit because they considered the peptide too small a target antigen for the immuno-contraceptive to be effective as a contraceptive. They hoped that any immune reactions generated against LH with its similar beta sub-unit would not be unduly problematic; however, some of these, such as damage to the ovaries or pituitary gland, may only manifest themselves after years of repeated immunization. Despite the larger target antigen, the prototypes of both the Population Council and the NII still fall far short of inducing an immune reaction of one to two years in the majority of women immunized.

Meanwhile, because of the anticipated low immune reactions to the peptide, the WHO research programme added a strong adjuvant (a substance which stimulates the immune reaction to the antigen with which it is mixed). The adjuvant, muramyl dipeptide (which has not been approved for use in antidisease vaccines) seems to have been the cause of muscle and joint pain and fever in several participants in the product's safety trials which took place in Australia and its efficacy trials which took place in Sweden. In June 1994, the Swedish trials were suspended after most of the seven participants developed one or more of these symptoms.

- Talwar, G.P. et al., "A vaccine that prevents pregnancy in women", Proc. Natl. Acad. Sci, Vol. 91, August 1994, pp.8535, 8533.
- 19. It has, as yet, been tested only as a product against prostate cancer. But depending on trial results, there are plans to test it as a male contraceptive.
- 20. At the outset of research in the 1970s, researchers agreed not to target any substance whose neutralization could interfere with other functions besides reproduction. Although hCG is considered by many researchers to be the most "promising" antigen because it is produced only by the early embryo and would need to be neutralized once a month at most, research has now established that the pituitary gland and certain types of lung cancer may also secrete hCG. As the WHO research team states, "It is not known whether there are other elements in the body which also secrete hCG." See HRP, "Fertility regulating vaccines: report of a meeting between women's health advocates and scientists to review the current status of the development of fertility regulating vaccines", World Health Organization, Geneva, (Doc. WHO/HRP/WHO/93.1)1993, p.17.
- See Griffin, P.D., Jones, W. and Stevens, V., "Antifertility vaccines: current status and implications for family planning programmes", *Reproductive Health Matters*, No. 3, 1994, pp.108-13.
- 22. Cited in Alexander, N.J. et al., op. cit. 9, p.615.
- Staines, N., Brostoff, J. and James, K., *Introducing Immunology*, Mosby, St Louis and London, 1993, (2nd edn) p.5.
- 24. There should be no difference between what is often termed a "user perspective" of a contraceptive and a "researcher's perspective". The research community and women's health or consumers' advocates should try to put themselves in the position of all anticipated users and assess the technology from their various perspectives with their differing views and in their differing contexts.

Even though two immuno-contraceptives are being designed for use in men, most of my assessment centres on prospective women users for three reasons. Most research has been carried out into ones which act in women's bodies. Theoretical and practical criteria by which to assess a contraceptive from the perspective of a man are lacking, partly because the condom is still the only reversible means of contraception for men but also because of power differences in most societies between women and men. It has been and still is harder for women to prevent outside control over their bodies.

- 25. The duration of the initial lag phase will depend on the type of contraceptive and on the woman's immune system. The current formula of the Human Reproduction Programme of the World Health Organization acting against hCG takes around five to six weeks to build up to this level while that of the NII in India takes about three to four months. The shortest possible duration is unlikely to be less than two to three weeks. For WHO, see Jones, W.R. et al., "Phase 1 clinical trial of a World Health Organization birth control vaccine", *The Lancet*, 11 June 1988, pp.1,295-8; for NII, see Talwar, G.P. et al., "Vaccines for control of fertility", paper presented at the HRP meeting between women's health advocates and scientists to review the current status of the development of fertility regulating vaccines, Geneva, 17-18 August 1992 and the 8th International Congress in Immunology, Budapest, 23-26 August 1992, p.5; for shortest duration, see Stevens, V.C., "Future perspectives in vaccine development", *Scandinavian Journal of Immunology*, No. 36, Supplement 11, 1992, p.139.
- 26. Report of the Symposium, "Points to consider in the assessment of the safety and efficacy of vaccines to regulate fertility", in Ada, G.L. and Griffin, P.D., (eds.) Vaccines for Fertility Regulation: The Assessment of Their Safety and Efficacy, World Health Organization, Cambridge University Press, Cambridge, 1991, p.289. Some commentators maintain that if a woman becomes pregnant, she can simply have an abortion because presumably she was taking the contraceptive because she did not want to have a child. Such a comment does not consider whether a woman has access to safe, legal abortion, nor does it recognize that the wish not to have a child when one is not pregnant. I am in favour of abortion as a woman's right, but oppose it as a duty.
- Quoted in Guymer, L., "Anti-hCG vaccine: Contraception for women or a tool for population control?" (mss), Deakin University, Geelong, p.33.
- Anderson, D.J. and Alexander, N.J., "A new look at antifertility vaccines", Fertility and Sterility, Vol. 40, No.5, 1983, p.567; Schrater, F.A., "Immunization to regulate fertility: biological and cultural frameworks", *Social Science* and Medicine, Vol. 41, No, 5, p.661.
- Jones, W.R., op. cit. 5, p.16; Thau, R. et al., "Advances in the development of antifertility vaccines" in Mettler, L. and Billington, W.D. (eds.) *Reproductive Immunology*, Elsevier, Amsterdam, 1990, pp.237-44.
- Report, op. cit. 26, pp.289-290; Nossal, G.J.V., "Life, death and the immune system", *Scientific American*, Vol. XX special issue, September 1993, p.30.
- 31. An effectiveness rate of 95 per cent is no higher than that recorded for contraceptives often considered by family planners to be relatively ineffective — condoms, diaphragms and some "natural" methods such as ovulation monitoring and breastfeeding on demand.
- Ada, G.L. and Griffin, P.D., "The process of reproduction in humans: antigens for vaccine development", in Ada, G.L. and Griffin, P.D. op. cit. 26, p.18.
- Basten, A., "Birth control vaccines", Ballière's Clinical Immunology and Allergy, Vol. 2, No. 3, 1988, p.771.
- See Duden, B., "Population" in Sachs, W., (eds.) The Development Dictionary, Zed Books, London, 1992, pp.146-157.
- 35. Filmed in "Antibodies Against Pregnancy: The Dream of the Perfect Birth From the Laboratory", a film by U. Schaz with I. Schneider, 1991.
- 36. Ibid.
- 37. Shearman, R. P., foreword to Jones, W.R., op. cit. 5, p.vii.
- Griffin, P.D., "A birth control vaccine", World Health, November 1987, p.25.
 Mauck, C.P. and Thau, R.B., "Safety of antifertility vaccines", Current
- 35. Madek, C.F. and Had, K.B., Safety of antiferring vacences, current Opinion in Immunology, No. 2, 1990, p.731. Early on in immuno-contraceptive development, researchers stressed that "immunization as a prophylactic measure is now so widely accepted that . . . one method of fertility control which would have wide appeal as well as a great ease of service delivery would be an anti-fertility vaccine". See HRP Task Force on Immunological Methods for Fertility Regulation, "Evaluating the safety and efficacy of placental antigen vaccines for fertility regulation", *Clinical and Experimental Immunology*, Vol. 33, 1978, p.360.
- 40. For instance, the Rockefeller Foundation's senior adviser for biomedical health research, Mahmoud Fatallah, maintains that "respecting women and responding to their needs is one of the best strategies for saving the planet. The demographic impact will not be diminished but enhanced". See Fatallah, M., "Fertility control technology: a women-centred approach to research" in Sen, G., et al., *Population Policies Reconsidered: Health, Empowerment and Rights*, Harvard University Press, Boston, 1994, p.229. WHO's David Griffin, meanwhile, acknowledges that the anti-fertility "vaccine" was originally developed in a "demographic-driven, science-led" framework, but thinks public debate should now focus on whether it could enhance women's choices (Personal communication, June 1993).
- Hartmann, B., Reproductive Rights and Wrongs: The Global Politics of Population Control, South End Press, Boston, 1995, p.154.
- 42. Avrion Mitchison summarizing the opinion of a number of participants at a WHO seminar on immuno-contraceptives. See Mitchison, N.A., "Chairman's summary: present status and future prospects of antifertility vaccines" in Ada, G.L. and Griffin, P.D. (eds.) op. cit. 26, p.249.

Biotechnology to the Rescue? Twelve Reasons Why Biotechnology is Incompatible with Sustainable Agriculture

by

Jack Kloppenburg, Jr. and Beth Burrows

Biotechnology is a commodity being researched and paid for by profit-oriented corporations. Yet even amongst those who are opposed to corporate control of biotechnology, there are many who argue that genetic engineering has a role to play in developing sustainable agriculture. Biotechnology, however, is a technology that has been shaped by a narrow range of private interests — interests that are incompatible with the demands of an ecologically-sound and socially-just agriculture.

The transnational corporations which are the principal engines of "globalization" foster and promulgate a vision of their activities as both inevitable and progressive. On 15 April 1994, the *New York Times* carried a six-page advertisement that began:

1944 Bretton Woods: The IMF and the World Bank
1945 San Francisco: The United Nations
1994 Marrakesh: The World Trade Organization History knows where it is going.
It's in Morocco that 124 countries are signing the GATT agreement.¹

The business interests that placed the advertisement want the public to believe that history has an immanent direction and purpose, that the International Monetary Fund and the General Agreement on Tariffs and Trade (GATT) are part of a natural evolutionary flow and that the business view of the future is the only possible view.

In the same vein, proponents of biotechnology increasingly portray genetic engineering as both "natural" and inevitable: by doing so, these industrial *conquistadors* effectively plant biotechnology's flag on the future — on everyone's future claiming it as their own and denying the space for other visions to be articulated. For example, in a 1990 article entitled "Planetary Patriotism", two top executives of the Monsanto Corporation maintained that caring for the environment while meeting a growing demand for food "requires sustainable agriculture" and that "sustainable agriculture is possible only with biotechnology and imaginative chemistry."² To oppose biotechnology is thus construed as opposition to sustainable agriculture. It is to be a know-nothing, backward looking, kneejerk opponent of technical progress.

But there is nothing inevitable about biotechnology, and to see it as such is to succumb to a determinism that is disempowering to many who might otherwise oppose the transformations that capital is so busy engineering. Whether biotechnology is widely adopted or not will depend on choices made by people in all walks of life, not least the choice of whether or not to resist its application and further development.

Yet, even among those whose knowledge of history renders them sceptical of corporate claims as to the benefits of biotechnology, there is a reluctance to throw the biotechnology baby out with the corporate bath water. Might there not be *some* truth in the assertion that "sustainable agriculture is possible only with biotechnology and imaginative chemistry?" Could judicious use of biotechnology's powerful capabilities by people of goodwill not help facilitate a transition to sustainable agriculture? Surely biotechnology must in some way or another be compatible with sustainable agriculture? Following are 12 reasons why it cannot.

1. The Commodity Form

Commodification is the central tendency in contemporary society. The principle on which businesses operate is that everything should be bought and sold, that nothing should be beyond the reach of the market. Neither knowledge nor the production of knowledge have escaped this commodification. By definition, commodities are available to those who can purchase them, and since purchasing power is a function of the distribution of wealth and income, business interests are the ones today in a position to dominate the purchase of knowledge and thus to control its development and deployment.

Those business interests have a record of gross environmental abuse. Despite its executives' pretensions to the status of "planetary patriots", Monsanto remains one of the largest polluters in the United States. The company was responsible for five per cent of the 5.7 billion pounds of toxic chemicals released into the US environment in 1992. Moreover, Monsanto has played a central role in promoting the type of high-input, homogenous, industrial agriculture that environmentalists have long opposed as non-sustainable, non-regenerative and socially inequitable.

Not surprisingly, those who are familiar with the dismal record of Monsanto and other major corporations promoting

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biotechnology — ICI, DuPont and Bayer to name but a few — are rightly sceptical of claims that biotechnology can be a force for good whilst it remains in corporate hands. In the United States, some 75 per cent of all research and development is now undertaken by private industry. Worldwide, companies such as Monsanto, Ciba-Geigy, American Cyanamid, DuPont, Hoechst, ICI, Unilever and Elf-Aquitaine now have the almost exclusive capacity to develop and introduce biotechnologies.

Given the increasing commodification of science and technology and the reality of where purchasing power lies, it is naive to expect a new tool such as biotechnology to remain outside of corporate control, let alone to deliver an ecologicallysustainable and socially-just agriculture.

2. You Can't Take the Baby Out of the Bath Water

Technological utopianism, even among progressive people, manifests itself in the hope that, if removed from its corporate entanglement, bio-technology could be used for sustainable ends. But the baby of modern biotechnology is not so easily separated from the corporate bath water. The new genetic technologies are being developed in corporate and academic laboratories in the industrial, commoditized, capitalist North to serve



The poster for a "Marx 2000" exhibition recently held in Switzerland. An accompanying text explained: "The series of characters covering Karl Marx's face on the poster represents a DNA sequence as it would be stored in a data bank. The sequence contains the gene which encodes the bovine somatotrophin protein (BST), a growth hormone produced through cloning and injected into cows in order to increase their milk yield. The superimposition of the author of Das Kapital and a DNA sequence suggests that nothing escapes the market anymore."

industrial, commodifized and capitalist ends. It may be possible to use genetic engineering technologies for other ends, but they will best serve those purposes for which they were originally and expressly designed.

Even if biotechnologies developed in corporate laboratories could be tactically modified into derivative "appropriate" or "indigenous" or "peoples" biotechnology, any successes and there would certainly be some — would be relatively insignificant compared to the social effects of deploying commercial biotechnologies. Some derivative biotechnology may help the poor, but it will not do so as well as research that starts with the needs of the poor as its point of departure.

Furthermore, any successes would be used to justify the unrestricted advance of genetic innovation by providing evidence that biotechnology can indeed serve (a few of) the poor or (a few of) the goals of agricultural sustainability. Indeed, Monsanto, USAID and other organizations have already started distributing surplus biotechnology (non-critical techniques and knowledge) just as Public Law 480 programmes were used to distribute surplus US wheat in the 1950s and 1960s. The Rockefeller and Ford Foundations — as they did with "Green Revolution" technologies — are financing the development of biotechnology expertise in the network of international agricultural research centres associated with the CGIAR system and in selected developing nations.

Such technical "aid" - like the wheat in earlier years - will bind recipients more closely to an expanding global market for these technologies and to a commitment to a particular approach to the production of knowledge.3 Scientific and technical cadres from developing nations are already trained in the use of techniques and the identification of problems as they are defined by the technoscientific community in the industrial North, implying continued technical, economic and epistemic dependency. Following someone else's leading edge means foreclosing opportunities to take a fundamentally different path to knowledge production.

3. Against Technological Determinism

Knowledge and technologies are social creations. Of course, neither scientists nor engineers make technology any way they like (just as people make history but not in any way they please). Nature presents certain constraints, but which elements of nature are explored and how nature is interpreted are determined largely by those who have the power to fund research.

The results of research can be unexpected; new knowledge can open

up multiple possibilities for future application. But how such new knowledge or technologies are deployed depends in large measure on social rather than technical parameters. Existing agricultural technologies have not so far been used in an environmentally-responsible and socially-just manner. Why, then, should one expect that the new biotechnologies will be so used without any changes in the social institutions that manage the creation and use of knowledge?

Ecological and social sustainability follow from social arrangements, not from the technologies developed.⁴ A focus on technologies as causal agents is a deflection from the hard but necessary task of social transformation, which is precisely what corporations intend. In their advertising, annual reports and public presentations, companies researching biotechnology continue to speak of technical miracles as both necessary and sufficient solutions to all the problems we face.⁵

The world's poor and hungry find a prominent place in these fables as the ultimate beneficiaries of biotechnological research and development. Companies such as ICI Seeds, Britain's largest seeds merchant, proclaim that biotechnology will be the most reliable and environmentally acceptable way to secure the world's food supplies. Similarly, an advertisement from Monsanto depicts maize growing in the desert with the caption: "Will it take a miracle to solve the world's hunger problems?" The implicit message is that to regard biotechnology as anything but an unalloyed good is not only irrational but downright inhumane: to reject biotechnology is to reject the best hope for a solution to world hunger and is thus to perpetuate the suffering of starving children.

But the poor and hungry are poor and hungry because they have little money with which to purchase agricultural inputs (not to mention land) or food. And companies are not in business to give away their products; they sell to those who have the money to buy them. Increasing agricultural production (even assuming this is possible through biotechnology) whilst leaving the structural causes of poverty and hunger unaddressed is a recipe not for feeding the world but for continuing to starve sizeable numbers within it.

4. Structural Limits to Corporate Research

The scope of current biotechnology research is in fact fairly restricted. Even assuming that industry's intentions are as green as it claims, companies still need to sell products and therefore need to develop saleable technologies as quickly as they can. This imperative imposes structural limits on how "alternative" corporate research can be. Private research money is invested in those areas of research that are commodifiable; they are not invested in those areas that cannot be quickly or easily packaged and sold or which are antagonistic to commodification because they are practices rather than discrete technologies (crop rotations for insect control, for instance). Industry will not develop "management technologies" (practices which involve manipulation of multiple variables in an agroecosystem and are therefore systemic) because they cannot be easily sold.

Thus industry tends to develop technical products which redress symptoms rather than solve underlying problems. For instance, against the depredations of the Colorado Potato Beetle, Monsanto offers not better methods of crop rotation but potato plants engineered to produce bacterial toxins in their tissues which will kill the beetle.⁶ Monsanto has constructed the problem as the Potato Beetle, not as potato monoculture. Existing systems of agricultural production are left intact while the root causes of unsustainability are left untouched. Bovine growth hormone, the Flavr Savr tomato and herbicide resistant crop varieties are additional examples of this tendency.

5. By Their Fruits Shall You Know Them

What is there to show for 20 years of research into biotechnology, a billion dollars of research expenditure and countless hours of scientific labour? There is recombinantly-derived bovine growth hormone (rBGH or BST), a product which cost more than \$500 million to develop and is so socially unsustainable that the European Union took the unprecedented step of banning it on economic grounds. There is the Flavr Savr, Calgene's \$25-million tomato with an added "anti-sense" gene that confers an additional three to five days' shelf-life, its sole supposed advantage over existing commercial varieties. Unfortunately, Flavr Savr tomatoes are also unusually susceptible to bruising and damage in shipment.⁷ The results of blind taste tests have been mixed. Whether or not the Flavr Savr is something to savour, its economic palatability may be compromised by its price, about double that of existing tomatoes.

6. It Hasn't Paid Off

Indeed, perhaps the most striking thing about the products of biotechnology is that there are so few of them. Beyond rBGH and the Flavr Savr, there are only a handful of additional products available. A few corn and potato varieties engineered to contain *Bacillus thuringiensis* toxin are soon to be marketed, and soybean and cotton plants resistant to herbicides can also be purchased. But despite frequent media reports of "a revolution on the farm", there has been no flood of agricultural products from either commercial or academic laboratories.

Living organisms are simply not as easy to transform or to recode as a computer programme; biology is far more complex than the genetic engineers anticipated. Developing more biotechnological products will be far more difficult and orders of magnitude more expensive than companies had expected.

Researchers maintain a public optimism that breakthroughs are just around the corner, if only the research monies continue to flow.⁸ Difficulties in actually developing and bringing genetic engineering to the market are seen, not as a reason to consider other strategies, but as evidence of the need to commit further resources to the effort. An enormous amount of time, money and labour has already been lavished on biotechnology with uncertain benefits. Monsanto alone has spent \$500 million over the last decade in order to develop a plant resistant to its Roundup herbicide. If genetic engineers cannot get the Flavr Savr to market unbruised unless it travels in special packaging, can they be expected to produce anything of benefit to campesinos in Guatemala?

7. The Road Not Taken

In the United States as elsewhere, there are all manner of traditional and visionary farmers at the margins and in the interstices between technological convention and scientific orthodoxy — Amish, Mennonites, Native Americans, organic farmers, perennial polyculturists, low input producers, seed savers and horse farmers — who continually produce and reproduce a landscape of alternative agricultural possibilities. Despite an agricultural policy environment actively hostile to their interests, many of them have managed not just to survive but to thrive. Would a sustainable agriculture be more realistic if the \$300 million Monsanto spent in developing bovine growth hormone had been spent on gaining a better understanding of rotational grazing of dairy herds or the structure of Amish Farming?

Compared with the resources directed to biotechnology, little time, money or scientific brainpower has gone into pursuing sustainable agriculture through means other than genetic technologies. Little effort has been made to understand the farming systems developed by those who — by their very survival outside conventional agriculture — have demonstrated useful and workable alternatives? The University of Wisconsin, for example, raised \$27 million for a new Biotechnology Center. Meanwhile, it houses both its Center for Integrated Agricultural Systems (a phrase that intimates sustainability without offending corporate sensibilities) and its Agricultural Technology and Family Farm Institute in a tiny, remodeled furnace building on the university campus.

There are, however, various progressive people of goodwill scattered throughout the biotechnology community who try to bring a commitment to peasants and small farmers or, more frequently, to an environmentally-benign agricultural biotechnology to their work. But their work is poorly funded or embedded within other research considered more interesting by conventional agribusiness or agriscientific interests.

An example of this is the work of CAMBIA (the Centre for the Application of Molecular Biology to International Agriculture), based in Canberra, Australia where researchers are trying to use sophisticated genetic engineering techniques to serve small and peasant farmers. They are attempting to develop apomixis — the ability to develop seeds through asexual reproduction — to allow farmers to propagate and maintain superior cultivars through seed. They are also attempting to develop "marker gene codes" with which to signal plant reactions to environmental changes, enabling farmers to improve observation and selection of cultivars.⁹

However useful apomixis might be to farmers, it is a threat to the seed industry, and thus despite the potential of its work, CAMBIA maintains its handful of scientists with difficulty. An argument put forward for not supporting them is that no one has enough knowledge to attempt what CAMBIA proposes. But meanwhile, the US National Science Foundation, the Department of Energy and the National Institutes of Health are providing \$100 million over a ten-year period for researchers to map the genome of a small, mustard-like plant, *Arabidopsis thaliana*, which is emerging as a key model for genetic engineering.

The **Journal of Environmental Law** is an authoritative source of informed analysis for all those involved in this vital field of legal study. The range of subjects encompassed by the Journal is extremely broad, extending from the more traditional fields of pollution control, waste management, and habitat protection, to challenging newer areas such as biotechnology, regulation of hazardous substances, and international regimes for common natural resources.

The Journal of Environmental Law encourages innovative and sustained appraisals of current and emerging concepts, policies, and practice; contributions from any jurisdiction will be considered for publication, though the Journal especially welcomes comparative or multi-disciplinary approaches.





8. Our Compromised Universities

If companies cannot or will not carry out alternative research agendas, could publicly-funded agricultural universities do so? Universities have long been the servants of agribusiness, and industry's influence on the direction of university research is growing rather than diminishing. Companies engaged in biotechnology are now reaching into universities in an unprecedented fashion, establishing a wide variety of arrangements to draw knowledge out of academia and into the corporate labs. Popular mechanisms include consulting, participation of university researchers on corporate scientific boards, university/ industrial consortiums, and direct, sometimes very large, industry contracts for research to be undertaken by universities. And the companies do not make the grants out of the goodness of their corporate hearts. Hoechst, for instance, expects something in return for the \$70 million it has provided to Harvard; Monsanto expects something out of the \$62 million it has given to Washington University. What the companies get is exclusive licences, patent rights, placement of corporate scientists as observers in university labs and early access to information.

Such arrangements present several challenges to academic and scientific integrity: conflicts of interest may arise; the free flow of information may be constrained; and the public may lose a pool of experts who might have been relied upon for a disinterested analysis of scientific issues and options since the best and the brightest scientists are often most closely associated with industry.

But most problematic is the influence of corporate support on the research agenda itself. American Cyanamid can have research on rBGH undertaken at the University of Wisconsin because it has given more than \$300,000 to the Department of Dairy Science. As public funding shrinks, the university is turned into a marketplace in which its intellectual labour is sold to the highest bidder. Public science, because of its close connections to industry, is constrained in its capacity to provide alternatives to industrial modes of developing biotechnologies. It has become complementary to, rather than competitive with, corporate biotechnology.

9. Pascal's Wager: Betting on the Wrong Side

Does the existence of possibly useful applications of genetic engineering in agriculture alter this critique of biotechnology? Consider the application of Pascal's Wager to the possible effects of modern biotechnology.¹⁰ Pascal decided that if he bet against the existence of God, lived a life of "poisonous pleasures" and was wrong, he condemned himself to eternal misery. But if he bet on the existence of God and lived an honest, generous life and was wrong, he sacrificed only a few fleeting pleasures.

Following Pascal, it would be prudent to bet against the free deployment of genetically-engineered organisms unless we were more than reasonably certain that their effects and proliferation could be known and controlled.

Corporate and academic biotechnologists argue that they are or can be reasonably certain of the environmental effects. Indeed, they maintain, restrictions on the release of geneticallyengineered organisms into the environment should be reduced on the grounds that gene transfer is nothing more than what nature itself does. Yet techniques such as recombinant DNA transfer and protoplast fusion are qualitatively different from sexual techniques of reproduction. To suggest that splicing a gene into a plant or animal is the same as making Roquefort cheese is deeply problematic. It is like saying that the atomic bomb is nature's way of making war and is not fundamentally different from napalm.

Attempts to legitimize local and indigenous knowledge by calling it "people's biotechnology" merely play into the hands of corporations by making the very point that they are trying to get across: that there is nothing particularly new about biotechnology. Given biotechnology's power to create wholly new organisms that could not be produced without the intervention of a scientist, and a corporately-funded one at that, it

represents a qualitatively new threat to the environment from the possible escape and proliferation of recombinant organisms, from unintended gene transfers, or simply from mutation or interaction which no one foresaw or intended.

The degree of the threat is uncertain, but it is possibly very large and certainly, given our track record with exotic species (for example, kudzu and zebra mussels introduced into the US and rabbits released for hunting in Australia), the risks are far from zero.¹¹ This is especially true of organisms such as insects and viruses now being designed as "transgenic predators" for biological control programmes.¹²

That there is a relative lack of ecologists and ecological data to gainsay or confirm claims about the environmental effects of genetically engineered organisms reflects more the paucity of funding for ecological studies than it

does the robustness of claims of low potential risk. Apparent lack of evidence of hazards should not be taken to imply safety but to reflect lack of testing for such hazards.¹³

Nevertheless, a variety of studies have shown that genetically engineered organisms may act in entirely unexpected ways.¹⁴ Danish researchers recently confirmed that genes inserted into oilseed rape are capable not only of moving to related weeds but of doing so very rapidly.¹⁵ University of Nebraska scientists have found that the Brazil nut genes transferred into a soybean plant not only produced the desired proteins but also produced other proteins potentially fatal to people allergic to Brazil nuts.¹⁶

The very difficulty that biologists have often had in getting transgenes to function is evidence of how imperfect their understanding is not only of the genome itself but also of genomeenvironment interaction. The environmental inactivation of newly-introduced genes means that one should be particularly wary of efforts to use transposable genetic elements to confer pesticide resistance on predatory mites, for instance. The very transposable genetic elements that permit genetic engineers to make cross species transfers may facilitate unanticipated additional transfers.¹⁷

Activist groups opposed to the development of biotechnology have emphasized potential dangers to human health and the environmental impacts of releasing genetically-engineered organisms. Claims of imminent danger are symmetrical with claims of imminent benefit, and people do respond to obvious or apparently obvious threats. But emphasis on possible threats to human health may not provide a broad-enough basis for mobilizing wider public concern. Just as the benefits of agricultural biotechnology may be slower in coming than many had anticipated, so too some real health problems associated with genetically-engineered food may be rarer than opponents suggest. Health and environmental problems associated with biotechnology will doubtless increase relatively slowly over time but it will be difficult, if not impossible, to partition the effect of genetic engineering in causing the problem from other variables.



Megan and Morag, two "identical" Welsh Mountain sheep, were cloned recently by scientists at the Roslin Institute in Edinburgh. The other six clones did not survive.

Each of those variables acting in isolation may be relatively benign. An increase in cancers, for example, might not be attributable just to atrazine or just to a genetically-engineered tomato. But individual benign components may have adverse synergistic effects. Again, Pascal's Wager seems useful. Why add to the chemical and biological burden our bodies are already bearing?

10. Against Reductionism

It is also possible to oppose biotechnology on epistemological grounds. What is at issue is not simply the nature of biotechnology, but the nature of Western science.¹⁸ In this critique, science is regarded not as a neutral tool, but as an undertaking stamped with the character of the society which produced it. Our society has been characterized by domination and control (of women, of classes, of ethnic or cultural groups, of other species and of natural resources) and the frames of reference we use to analyze and interpret the physical world reflect that character.

Hence, even if biotechnology were to come under broader social guidance, simple redirection of objectives might not be enough to develop sustainable technologies in agriculture. Agricultural scientists are, after all, working within a dominant epistemological paradigm, commonly described as reductionist. That is, the methodological principle of scientific research is to





Isolated Asario Indians high in the Colombian Sierra Nevada. They have been persuaded to allow scientists from pharmaceutical company Hoffman la Roche to take blood samples in return for one-off medical treatments.

break a problem down into manageable pieces and look for those elements which provide the greatest amount of control over the phenomenon of interest. This method of research is powerful but fundamentally anti-systemic. When a few variables are selected for detailed analysis, scientists tend to lose sight of how those variables are articulated to the rest of the problem under scrutiny, with unanticipated and unfortunate results.

For example, in trying to increase yields in corn, agricultural scientists in effect reduced a cornfield to corn genes and bags of nitrogen. The development of genetically-uniform hybrid corn, needing high applications of inorganic fertilizers, produced high yields (and created the fertilizer industry and the seedcorn industry). Because they have inorganic fertilizer, most corn farmers no longer worry about soil fertility and thus, instead of planting rotations of leguminous crops to maintain fertility, plant corn continuously. With apparently unlimited fertility, they plant the plants closer together, for which they need to get rid of weeds and thus use herbicide. When insects and weeds become resistant to the herbicide, farmers use more and more pesticides which flow into the groundwater. Because nothing but corn is grown, soil begins to wash away; in addition, the pesticides kill off micro-organisms in the soil and organic additions are reduced. Using heavy mechanical equipment, the soil is compacted, compounding erosion problems. Costs continue to rise because the equipment runs on oil and the chemicals are petroleum-based. Farmers end up paying more and more for inputs that eventually degrade and destroy the environment into which they are being ploughed.

Such effects of reductionistic and linear thinking take a while to emerge. By the time they do and are recognized as such, a powerful set of interests has built up to sell the various piecemeal solutions to the different problems and thus sustain the reductionist system — interests which want to carry on selling their solutions regardless. In California, for example, companies did not stop promoting methyl bromide, even though they acknowledged it was destructive to the ozone layer.

Biotechnology merely slots into this approach rather than

challenging it. Private industry thrives on the reduction of complex systems to component parts, a simplification which creates space for perpetual rounds of product development. The very nature of modern biotechnology, operating as it does at the molecular and cellular levels, makes the reductionistic, piecemeal route especially tempting.

Rather than drawing attention to a systemic understanding of the interactions in agroecosystems such as a cornfield, apple orchard or cow pasture, biotechnology focuses its vision in the opposite direction, downward and inward rather than upward and outward. Recombinant DNA technology may provide an atrazine-resistant soybean plant, but it will not yield information about crop rotations, cultivation, natural predators, allopathy, cover crops, intercropping, timing of planting — all of which might be alternate and systemic routes to weed control.

11. Biotechnology Distances Us From Other Species

Biotechnologists are not limiting their activities to microorganisms. Scorpions, salmon, pigs and cattle are all slated for "improvements" of various sorts. In what has been dubbed "pharming," sheep, goats and cows are being genetically engineered to produce human proteins in their milk.¹⁹ The intention is to make animal milk a perfect substitute for human milk. This will doubtless be marketed as better than human since it will be subject to rigorous quality control and will not contain the toxins now found in all humans.²⁰

Such a wholesale loss of respect for the integrity of other species is endorsed even by many conservation biologists captivated by the "price it to save it" approach. In writing of "unmined riches", E. O. Wilson describes what he calls "The New Environmentalism":

"The race is on to develop methods, to draw more income from the wildlands without killing them, and so to give the invisible hand of free-market economics a green thumb."²¹

All species come to be viewed as little more than sets of genetic codes.²² The UN Convention on Biological Diversity comes to be little more than a means to legitimate a market for genes.²³

12. Biotechnology Distances Us From Each Other

If we regard other species as mere commodities, can we fail to see each other — or parts of each other — as commodities as well? Corporate and academic biotechnologists have recently begun to focus on human genetic information as a raw material. The leading journal *Science* reports on a programme of bioprospecting that targets our own species: "Geneticists want to collect DNA from such groups as the Arewete. Just 130 members of this tribe remain on the Xingu River in Brazil."²⁴ Reading that, one wonders what kind of sensibility would rather have the genes than the people? A clue may lie in the \$70 million deal that Hoffman la Roche recently struck with the Millennium company to work on mapping the human genome. If species, including our own, are treated as commodities, our treatment of each other will increasingly come to reflect differential values in the market.

Looking Elsewhere

For these 12 reasons and in the absence of dramatic social, political and economic changes, we should not expect companies, universities, scientists and technocrats to use biotechnology to develop a sustainable, regenerative, low-input and diversified agriculture. There is little reason to believe that rBGH, herbicide resistant corn or cloned Douglas-firs assist a move towards sustainable agriculture. Biotechnology for the foresee-

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able future will continue to be dominated by and respond principally to the needs of industry.

Technology and social power are not separable. The way knowledge is developed and the uses to which knowledge are put reflects the distribution of social power. The development of modern biotechnology is being shaped by a narrow range of private interests which considerably influence the agendas of our public universities. There are no reasons to believe the Planetary Patriots who tell us otherwise or support the technical applications they are promulgating. We should look elsewhere for approaches towards sustainable agriculture.

This article is drawn from Does Technology Know Where it is Going? 12 Reasons to Stop Expecting Modern Biotechnology to Create a Sustainable Agriculture and What to do After the Expectation Has Ceased, available from the Edmonds Institute, 20319-92nd Avenue West, Edmonds, WA 98020, USA.

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"US ratification of the Convention benefits US agriculture by . . safeguarding US access to agricultural genetic resources, and encouraging conservation of such resources in other countries . . . The majority of important US agricultural crops and livestock originated in other parts of the world, and the major sources of the variation essential to future improvements, through traditional breeding and biotechnology, are located outside US boundaries. Access to this germplasm is essential to continued improvement in the productivity of US crops . . . The US depends on access to foreign germplasm for plant breeding programs of such key crops as corn, wheat, soybeans, potatoes, cotton, and most vegetables . By becoming a party to the Biodiversity Convention, the US will ensure continued access to genetic resources."

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The Russian Far East

Foreign Direct Investment and Environmental Destruction

by

Josh Newell and Emma Wilson

The Russian Far East has long been regarded by Moscow as a natural resource base. Under the Soviet regime, huge industrial complexes were set up to exploit the region's abundant reserves of timber, coal, diamonds, gold, oil and gas. With the collapse of the Soviet Union, the area is now being opened up to foreign investment. Powerful national and multinational interests are seeking to turn the region into a "natural resource colony" for the Pacific Rim economies.

The Russian Far East - an area equal in size to two-thirds of the continental United States - is one of the world's last remaining wildernesses; it covers 6.63 million square kilometres, or 40 per cent of the Russian Federation.1 Home to some 9.2 million people, including 88,000 indigenous people, the region has a high geographical and biological diversity, with climate zones ranging from Arctic to subtropical, and provides a habitat for many endangered and endemic species of flora and fauna, including the Amur tiger, Far Eastern leopard, Japanese crane, Himalayan black bear, grey whale, Siberian snow goose, Korean pine and gingseng. It also boasts some of the richest riparian and marine fisheries in the world. Forests make up 45 per cent of the territory, stretching from Lake Baikal in the southwest to the Kamchatka Peninsula in the west, and play a vital role in regulating global climate.

A Resource Colony

Under the Soviet authorities, central government planners viewed the region primarily as a source of raw materials for European Russia, constructing entire cities — with names like Uglegorsk ("coal town") or Neftegorsk ("oil town") around the extraction of one or more resources. Little money was reinvested to diversify regional economies or to develop locally-based processing capabilities. Although the region produces just five per cent of Russia's total industrial output, it provides more than 50 per cent of the gold mined in the country, all the diamonds and tin, 53.3 per cent of fish and marine products, and 7.9 per cent of forest products.² The largest industry is fishing, followed by mining of precious metals, machine building and forestry.

After the dissolution of the Soviet Union, shrinking federal subsidies coupled with high fuel costs, declining domestic demand, the transformation of stateowned enterprises into joint-stock companies, and a lack of competitiveness crippled industry in the Russian Far East (RFE). Industrial output declined by 21 per cent in 1994. In a mad dash for hard currency, all industries are reorienting themselves toward the export market and trade is booming.

Almost 90 per cent of exports from the RFE now go to Pacific Rim countries. South Korea has been active in developing economic ties, but Japan is the region's largest trading partner (as it was before the collapse of the USSR), exports to the country increasing by 25.7 per cent in 1994.³ Fish shipments to Japan, which almost tripled from 1990 to 1994, account for 62 per cent of Russia's total fish exports.⁴ In 1994, one-quarter of all Japanese log imports came from Russia, the bulk of them from the RFE. Together, Japan and China take 70 per cent of the RFE's raw log exports.⁵

Barter trade is also growing, as Russian companies trade coal, timber, gold and fish for products they can sell on the domestic market — mainly foodstuffs such as canned food and alcohol and consumer goods such as electronic equipment and automobiles. Critical raw materials such as coal are being exported at the expense of local residents. The *oblast* (administrative district) of Primorskiy Krai, for example, suffers from a chronic shortage of fuel for heating while its ports export millions of tonnes of coking coal each year.

Direct foreign investment has so far been less vigorous than trade but is increasing as powerful national and multinational interests size up the RFE as a "natural resource colony" for the Pacific Rim economies. Foreign oil and trading companies, including Exxon, Texaco, Royal-Dutch Shell, Marathon Oil, Mitsubishi Corporation and Mitsui, plan to pump over US\$30 billion into four offshore oil developments near Sakhalin Island in the Sea of Okhotsk, with pipelines running the entire length of the island to supply refineries in Japan. Foreign mining companies have formed joint ventures to mine gold in Kamchatka, Magadan and Amur, copper in Chita and coal in Yakutia. In June 1995, the Global Forestry Management Group (GFMG), a consortium of ten US wood-product companies from Oregon, Washington and northern California, established the first largescale US logging joint venture in the region, supplying logs to Japan.

Clearcutting the Forests

Foreign direct investment is bringing few benefits to the people of the RFE, whilst threatening widespread environmental destruction.

In the forest sector, between 40 and 60

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per cent of all timber cut is never used four times more than in "developed" countries.⁶ Foreign capital could (in theory) help to reduce such waste by supplying more efficient, ecologically-sound equipment; it could also be used to create a more sustainable forest industry that focused on local value-added processing, securing jobs for the numerous communities that depend on logging, hunting and other forest uses.

However, the equipment being supplied by joint ventures operating in the RFE is aimed primarily at industrial logging. GFMG, for instance, is to supply its Russian partner with \$4.5 million worth of equipment including Timberjack 2520 and Caterpillar 518G harvesters7 which will allow the Russians to log forests more rapidly and along steeper slopes. Meanwhile, South Korea's Hyundai Corporation and two Russian companies are clearcutting approximately 200,000 cubic metres a year near Svetlaya in Primorskiy Krai. The logging has been permitted by the local and regional authorities despite the project's receiving a negative environmental impact assessment from the federal government.

Foreign investors do not appear committed to developing local processing. All the timber from the Hyundai joint venture, for example, has been exported as raw logs — mainly to Japan⁸ — as has that from GFMG's joint venture. Although GFMG is considering building sawmills to process timber locally, the consortium's lawyer, Mike Haglund, has said that the venture wants to keep its own mills in the US Pacific Northwest operational and is therefore seeking to:

"replicate, by importing [logs] from overseas, the Japanese formula for maintaining a strong manufacturing base despite an inadequate supply of local raw logs."⁹

Significantly, Japan's hostility to local processing is believed to be one of the reasons why negotiations for a massive trade deal between Japan and Russia — the KS Sangyo project¹⁰ — have stalled. The Japanese participants have strongly resisted Russian demands for Japanese companies to import more processed wood products instead of raw logs.

With substantial short-term gains to be made from raw log exports, timber companies are looking to open up roadless wilderness to find new sources of timber. The Sikhote-Alin' mountain range and the Sea of Japan coast, which has some of the richest forests in the RFE, appear to



The Russian Forest Service estimates that there are over 21 billion cubic metres of timber reserves in the Russian Far East (RFE). Over half these forests are in Yakutia, but the most productive and accessible ones are in the southern administrative districts of Khabarovsk, Primorskiy, Amur and Sakhalin). There are 18 billion tonnes of coal in the RFE, 80 per cent of which lie in Yakutia. Oil and gas reserves (308 million tonnes of high-grade oil and 1.5 trillion cubic metres of gas) are found mainly on Sakhalin Island and in Yakutia, but there are also significant off-shore reserves on the continental shelf bordering Khabarosvsk, Magadan, Sakhalin Island, and the Kamchatka Peninsula. The Kuril Islands and Kamchatka have geothermal energy resources.

Gold and silver reserves are mainly in Yakutia, Magadan, Khabarovsk, Amur and Kamchatka. Yakutia boasts the world's second largest reserve of diamonds — providing Russia's entire supply. Most of the RFE's confirmed 4.4 billion tonnes of iron ore deposits are in southern Yakutia. Other important metals found in the RFE include tin, antimony, tungsten, mercury, lead and zinc.

Marine resources may be the RFE's greatest wealth, with fish stocks estimated at 29 million tonnes. Pollack and a sardine called *ivasi* make up 85 per cent of the RFE catch. Other important species include salmon, crab shrimp, scallops and sea urchins. These resources are distributed in the Sea of Okhotsk (46 per cent), in the coastal waters around the northern Kurils (18 per cent), in the Sea of Japan (12 per cent), the Bering Sea (11 per cent) and the eastern shores of Kamchatka (7 per cent).

be their next targets. AO Trassa Sukpai-Nel'ma, a consortium of Russian timber companies, is planning to build a 160kilometre logging road from Nel'ma on the east coast of Khabarovsk Krai to the town of Sukpai on the Trans-Siberian Railroad. If built, the road would open up a million hectares of near-roadless wilderness and fir, spruce and larch forests in the Samarga and Sukpai River basins. In the process, it could destroy the traditional hunting grounds of the Samarga Udege peoples, who are opposed to the project, and damage a key range of the



Mountain peaks in Yakutia, north-eastern Siberia. Forests cover forty-seven per cent of Yakutia, which also produces 99 per cent of the Russian Federation's diamonds. Eager to diversify its industries, the Yakut government has offered six oil fields, primarily in the southwest, for development.

northern habitat of the Amur tiger. The road has already been approved by the authorities in two of the districts that it will cross.¹¹ Meanwhile, two Russian companies — the Daleks Corporation and the Dalles Corporation — are planning to build a port at Dembi, just south of Nel'ma.

US companies are eyeing up these wildernesses too because of cutbacks in the logging of US national forests. All that appears to stand in the way of greater US involvement is a 1990 ban by the US Department of Agriculture on the import of raw Siberian logs into the United States because of the danger of insect pests. (In 1991, the US Forest Service determined that pest-ridden larch imported from the RFE could cause \$58 billion in damage to US forests). New rules have recently been introduced, however, which (if they survive a legal challenge by a coalition of US timber producers and environmental organizations) would allow heat-treated wood to be imported.

Meanwhile, the Russian-American Ionized Energy Services (RAIES), a joint venture of Russian, US and Norwegian government agencies and private companies, is planning to build 11 nuclear irradiation plants to sterilize Russian timber for export to the US. Two of the plants will be located near St. Petersburg and two in the Black Sea region. The remaining seven will be built along the Pacific coast in the Russian Far East. If the USDA approves imports of logs, and seven irradiation plants are built in the RFE, exports of timber from the region could more than quadruple, inevitably increasing the rate of logging. The Russian State Industrial Forest Company (Rosleprom), the RAIES partner in charge of timber supply, is well known for its disregard of environmental regulations.

Digging Deep

Foreign and Russian mining companies are also teaming up to exploit the RFE and its vast mineral wealth. Major ores include diamonds, gold, silver, platinum, tin, lead, zinc, tungsten and antimony. As in the forestry sector, current methods of extraction are highly wasteful, with an estimated 20 per cent of mined ores being lost during the mining process and 50 per cent during enrichment.¹²

Mining, long a major industry in the region, has already turned many areas into moonscapes and led to widespread pollution of rivers. Almost all the coal mined in the RFE is extracted by opencast methods, which are cheaper than shaft mining, but much more destructive. In Amur oblast, 60 years of open-cast mining in the coal fields of Raichinshoe have created a barren wasteland of 9,000 hectares. Local environmentalists, such as Dr Yuri Darman, Director of the Amur branch of the Socio-Ecological Union, fear that planned open-cast mining of the Boguchanskoe coal reserves in Arkhara region and the Yerkovetskoe reserves in Ivanovskiy district will create similar devastation. Amur *oblast* also has the second largest gold reserves in the RFE. As of spring 1995, 60 consortiums were working in the *oblast* while others were moving in. Gold mining has already transformed over 18,000 hectares into gravel wasteland, with only five per cent of the land reclaimed each year. Pollution from gold mining operations is poisoning rivers where salmon spawn; the present system of pollution fines does little to deter the illegal discharge of wastes directly into surface waters.

Indeed, controls on mining are rarely observed. In Chita *oblast*, the RFE's south-westernmost administrative district, none of the mines or refineries regulate their airborne emissions. Refineries release an estimated 82,000 tonnes of pollutants into the atmosphere annually, and most solid waste is dumped directly into surrounding ecosystems with few or no measures taken to remove contaminants. Yet to attract foreign investment, mining interests are pressuring the federal government to relax Russia's mining regulations, including environmental standards.

The federal government regards foreign investment in mining as essential to the Russian economy, which still depends heavily on the extraction and trading of minerals. With the disintegration of the Soviet Union, many previous sources of gold and silver are now controlled by states independent of the Russian Federation. Uzbekistan, for example, controls the Muruntal gold reserves which used to provide the Soviet Union with about 150 tonnes of gold per year, while Kazakhstan controls the western Altai mining region, previously the Soviet Union's leading source of silver.

As a result, the Russian Federation is opening up the previously undeveloped regions of the RFE, notably Kamchatka *oblast*. According to some estimates, Kamchatka's deposits could contain 1,000 tonnes of gold and up to 5,000 tonnes of silver and 30,000 tonnes of titanium. Specialists believe that one of the largest copper and nickel reserves in Russia is on the Kamchatka peninsula.

A major factor holding up mining in Kamchatka, however, is the lack of detailed geological surveys, which require substantial investment. The federal and regional governments hope to finance such surveys through joint ventures with foreign companies, which have long been interested in the area's mineral wealth and are now applying for licences to operate on the peninsula.¹³

One joint venture, Kamgold, made up of Grynberg Resources (of Denver, Colorado, US), Kinross Gold (of Toronto, Canada) and the Russian venture Kamgeo, has received a controversial licence to mine the Aginskoe reserves in central Kamchatka, estimated to contain about 30 tonnes of gold. The deposit is located on an area designated since June 1994 as the Ichinskiy Zoological Zakaznik (Wildlife Refuge) to protect brown bear, blackcapped marmot, mountain goat and sable. In September 1994, Kamchatka's regional government decided to exclude 51,850 hectares from the reserve in a move that Dr Sergei Solovyov of the Kamchatka Association of Greens maintains is legally questionable.14

Environmentalists are also concerned that the joint venture will omit restoration and mitigation measures compulsory in the US and Canada¹⁵ and will attempt to exploit mineral reserves other than gold on the same territory and to expand throughout the peninusla.¹⁶

Elsewhere, in the Even region of Magadan oblast, the US company, Cyprus Amax Minerals (also of Denver, Colorado), has joined up with five Russian companies to develop the Kubaka gold deposits. Annual production is estimated at 639,000 tonnes and the project is expected to yield about 9.7 tonnes of gold and 7.4 tonnes of silver a year (more than one third of Magadan's total production for 1994).17 The project is part-funded by the US Overseas Private Investment Corporation (OPIC), a federal agency that insures and finances US firms overseas, which is providing \$50 million in loans and \$150 million in insurance. The European Bank for Reconstruction and Development (EBRD) is also providing a \$50 million loan.18

As the Kubaka gold project was the first joint venture to be given a mineral deposit production licence in the Russian Federation, many observers view it as a litmus test for future agreements with Western companies.¹⁹ The Russian press reports that local officials have provided special subsidies for the project, including lower taxes and a higher share of the profit to the US partner than is normal for joint ventures.²⁰

The Kubaka project is also significant because of the size of the planned mine. Given gold mining's history of destruction in the RFE, the scheme does not bode well for the *oblast*'s forest and river ecosystems. Infrastructure development for the project could also open up the area to

Supping at the Public Trough Subsidies for the Private Sector

Many of the Western joint ventures now operating in the Russian Far East are heavily subsidized by their national governments, either through loans and guarantees from government agencies or through multilateral agencies such as the World Bank and the European Bank for Reconstruction and Development (EBRD). The following are just a few of the public funds now being used to subsidize "private sector" involvement in the Russian Far East:

The Overseas Private Investment Corporation. A little known US agency that provides political risk insurance, investment grants. and loans to US ventures working abroad, OPIC has approved more than US \$1.5 billion in finance for 30 projects in the newly-independent states of the former Soviet Union. In the Russian Far East, it has provided support for the Global Forestry Management Group's venture to log one million acres of fir and spruce forest in Khabarovsk and is also financing a logging venture by the Pioneer Group along Siziman Bay. Future projects in which OPIC is considering involvement include several logging and mining ventures in Siberia. All-Alaska Seafoods, based in Seattle, has received a \$13 million lowinterest loan for a joint venture with Russia's Dal'moreprodukt to catch crab for export. Although OPIC claims to be environmentally responsible, it operates without any set of clear environmental guidelines and has supported logging operations employing largescale, destructive clearcutting techniques.

• Enterprise Funds. A number of privately-managed enterprise funds have been set up with US taxpayers' money to promote investment in Russia. These include: the Fund for Large Enterprises in Russia (FLER), co-sponsored by USAID and OPIC; the Russian-American Enterprise Fund (RAEF); and the Defense Enterprise Fund. Although bankrolled by the public, these enterprise funds have yet to release any environmental requirements or guidelines for their investments; nor are they required to disclose the names of the companies with which they are negotiating. Operations which have received backing from the funds include: a joint venture that will produce machinery for oil and gas drilling; a wood-processing plant in the Arkhangelsk region; and a controversial project to use nuclear technology to irradiate Siberian logs intended for import into the United States.

• The European Bank for Reconstruction and Development. Russia has been the largest recipient of EBRD funding since the Bank's inception in 1991, with project funding currently totalling US \$1.1 billion. Major projects in the Russian Far East include a \$43.2 million loan to Kubaka Gold, a joint venture to develop gold mines in Magadan *oblast*; a \$13.4 loan to the Far East Shipping Company to buy three container ships from Poland; and \$24.7 million in financing for a venture-capital fund — the Far East Russia Regional Fund — to buy equity in Russian companies. The EBRD also works closely with the World Bank's International Finance Corporation, which is active in financing the development of energy resources and, more generally, "private enterprise".

logging and further mining as roads cut into the remote and roadless wilderness. It may not be possible to generate sufficient power at the mining site: hence there is speculation that the Sredneskanskaya hydroelectric dam is being constructed to provide energy for the project and future joint ventures.

Infrastructure Development

As the Russian Far East orients its economies toward the export markets of the Pacific Rim, a major priority for the regional authorities is to expand, upgrade and create new ports along the coast. Ol'ga, Plastun', Svetlaya and Amgu on In a mad dash for hard currency, all industries are reorientating themselves toward the export market.

Primorkskiy's coast have already become major export centres for forest and marine resources, and timber exporters have been working to convert former military ports at Bol'shoy Kamen and Sovetskaya Gavan'.

Foreign and Russian investors have also formed a joint venture to develop a port at Rudnaya Pristan, in the centre of Primorskiy Krai near Dalnegorsk. Three companies — BOR (a large producer of boric acid, Dalpolimetal (lead and silver) and Primorlesprom (timber) — are backing the port. Glencore International AG of Switzerland, Russia's largest coal exporter, recently purchased 15 per cent of Dalpolimetal.

Developing these ports will open up much of Sikhote-Alin' to logging and will allow timber exporters greatly to increase the amount of logs they can export. Port development will also make it easier for logging companies to ship endangered tree species such as Korean pine. Cities such as Ol'ga and Plastun' are timber towns: the scope for timber companies to "control" customs officials is thus likely to be greater than in the larger ports at Nakhodka, Vostochniy and Vladivostok.

By far the biggest proposed infrastructure project is the planned Tumen River Development Project,²¹ which is intended to create an international free-trade zone on the border between Russia, China and North Korea. The project, which is being developed by the United Nations Development Programme (UNDP) and the United Nations Industrial Development Organization (UNIDO), plans to use timber, minerals and other raw materials from Russia and Mongolia, labour from China and North Korea, and financing and technology from Japan and South Korea. The aim is to transform the region into a low-cost processing and trans-shipment zone for the export of materials from Siberia, China and Mongolia to Japan and other Pacific Rim countries.

Road, rail and port construction is already well underway. China, eager to gain access to the Sea of Japan, is developing a railway between Hunchun in China and Kraskino and Zarubino in Russia. The port of Zarubino is also being expanded, using \$30 million of finance from Japanese companies. North Korea is also planning an ambitious port expansion programme, and is developing roads and railroads to connect with China. Such development threatens ecological ruin for the fragile Tumen Delta — a wetland of international importance — along with the extremely rich marine ecosystem of its adjacent bays and inlets.

Stopping the Destruction

The plunder of the Russian Far East is not proceeding without resistance, however. Indigenous groups are calling for legal recognition of their rights to use the resources of their lands as they see fit and environmental groups are also active in opposing current developments. In 1989, for example, Group Taiga, a small nongovernmental organization in Promorskiy Krai, successfully lobbied the federal parliament to ban the commercial logging of all cedar and Korean pine. More recently, in 1992, plans by the Hyundai Corporation to clear-cut the old growth forests of the upper Bikin River were thwarted by an international campaign, headed by the Primorski Krai Regional Association of Indigenous Peoples (PRAIP) and supported by Greenpeace, the Korean Federation of the Environmental Movements and others. Activists blockaded Hyundai from entering the port of Svetlaya and supporters from all over the world wrote protest letters to the company.

According to Russian activist Anatoly Lebedev, pressure from outside Russia played a key part in the success of the Hyundai campaign. Lebedev also stresses the vital role that international groups can play in supporting local groups in the RFE by supplying up-to-date information on companies planning projects in Russia and by sharing experiences of successful campaigns. Perhaps most important of all, says Lebedev, "We need foreign activists to pressure foreign companies and government financing agencies such as OPIC, the US Ex-Im Bank and multilateral development banks. They should insist that such agencies only invest in or support those projects which benefit local communities and which follow the strictest international environmental standards."

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Between the Devil and the Deep Blue Sea Development Dilemmas in Mozambique

by

António Massinga

Mozambique is one of the world's poorest countries and highly-dependent on foreign aid. After three decades of devastating warfare, the country has adopted an IMF-inspired structural adjustment programme to attract foreign investment. Mainly South African entrepreneurs are investing in eco-tourism, exploiting the country's beaches and wildlife reserves. Others such as pulp and paper companies are also sizing up the country's land for plantations. The multiple grabs for Mozambique's resources have confronted environmentalists at times with uncomfortable dilemmas. Defeating one potentially damaging development proposal may only be possible by supporting another.

Mozambique's beaches along its 2,500 kilometre coastline and its once abundant wildlife inland have drawn visitors since the colonial era. White elites from Mozambique, Rhodesia and South Africa came to one of the richest game parks in southern Africa, Gorongosa, which was considered to be the "showpiece of colonial Mozambique's conservation effort",¹ and several other hunting preserves (*coutadas*). *Coutada* 16 in Gaza province, created in 1961, became one of the most commercially-developed hunting reserves in Mozambique.

Tourist infrastructure was built to accomodate the visitors, encouraged by the colonial government which believed that tourism was critical to the country's economic development. Between 1967 and 1971, the number of foreigners visiting Mozambique rose from 292,000 to 548,000 while tourism's contribution to the country's balance of payments increased from 272 million escudos (US\$130 million) to 417 million (US\$180 million).² Guides recall the "hundreds of hotels, nightclubs and bars" in "cosmopolitan cities" such as Beira in the centre of the country and Maputo (known at the time as Lourenco Margues), the capital in the south.3

Today, most of these hotels and holiday complexes are in ruins after some 30 years of warfare. From the mid-1960s, the Mozambican Liberation Front (Frente de Libertação de Moçambique or Frelimo) led the resistance against Portugal, which had colonized the country during the "scramble for Africa" in the late nineteenth century. In 1975, Mozambique gained its independence and Frelimo came to power. The white Portuguese elite all but deserted the country, while Frelimo's principled attitude towards its white-ruled neighbours cut the country's official economic links with Rhodesia and South Africa. As a result, Mozambique lost 50 to 60 per cent of its foreign visitors.

In response to Frelimo's victory and its support of black opposition movements in Rhodesia, Ian Smith's minority government supported the formation of a guerilla army, the National Resistance Movement (Resistência Nacional de Moçambique or Renamo) to oppose Frelimo and carry out insurgency within Mozambique. After the 1980 Lancaster House Agreement which granted Rhodesia black majority rule, South Africa became Renamo's principal supporter along with conservative circles in the United States which were keen to stem supposed Soviet influence in Africa.

The guerilla war between Frelimo and Renamo destroyed most of the country's tourist infrastructure: hotels and bungalow parks became battlefields or were simply looted. The Gorongosa game park became a Renamo stronghold and was stripped of game by soldiers hunting for food and trading in illegal ivory. Even after the 1985 Nkomati Agreement with South Africa under which bilateral relations with Mozambique were officially resumed and the border reopened, tourism was not rekindled; continued Renamo raids made travel by road unsafe.

Warfare devastated the country's economy. Its mainstay, agriculture, and its major export, prawns, were disrupted and transport infrastructure destroyed. Under the pressure of economic collapse, the Frelimo government took a structural adjustment loan in 1987 and went on to implement the various accompanying IMF/World Bank conditions. Government subsidies were cut, the local currency devalued, and market restrictions and regulations lifted. Almost all large enterprises, nationalized soon after independence, were targeted to be privatized again and restrictions on foreign investments were gradually lifted.

Consolidation of the Peace

Mozambique's civil war came to a close with the end of the Cold War and of apartheid in South Africa. In 1992, Frelimo and Renamo signed a peace treaty, and two years later, elections under the auspices of the United Nations resulted in the country's first multi-party parliament.

The ceasefire and economic liberalization have made the country attractive once again to foreign investors; between 1989 and 1994, annual foreign investment in the country rose from \$8.8 mil-

Antonio Massinga is a pseudonym.

lion to \$65.7 million. Britain, Portugal and South Africa accounted for more than three-quarters of total foreign investment in Mozambique between 1985 and 1994 (some US\$272 million). The second largest investment sector in the country between 1985 and 1993 was tourism at \$122 million, exceeded only by agriculture. Many South African investors perceive Mozambique to be the "paradise not yet lost" in contrast to the beaches in their own country which have succumbed to mass tourism.

New investments have ranged from a few tents or hostels to large bungalow parks and hotels. The International Finance Corporation, the private-sector lending arm of the World Bank, funded the restoration of the Polana hotel in Maputo to its colonial splendour as part of a joint venture between a South African company and the hotel's original Portuguese owners; other hotels, such as the Cardoso, owned by British multinational Lonrho, have also been renovated.

At the same time, the numbers of visitors increased. Between 1993 and 1994, the number of nights that visitors (domestic and foreign) spent in hotels almost doubled to reach 9,546. Camp sites and bungalow parks, however, continue to be the most popular places to stay; in 1971, about one quarter of tourists spent their holidays camping and the figure is probably similar today.⁴

Promoting Tourism

A 1994 World Bank study advocates tourism on the grounds that it is labour intensive, creates decentralized employment for less privileged people, contributes to political stability and brings in foreign exchange. The Economist Intellegence Unit estimates a potential tourism income for Mozambique of \$80 million per year.⁵

The Bank study also acknowledges the general limitations of tourism as a development strategy: currency "leakages" to foreign airlines and hotel chains and to pay for tourist consumption of imported goods; foreigners rather than local people holding management jobs; environmental degradation; demographic distortions; and moral and cultural disintegration, typified by increases in prostitution.

Indeed, the recent rise in the number of hotel beds in Mozambique was not accompanied by an increase in employment: according to official tourism statistics, hotels employed just over 2,400 workers from 1992 to 1994, even though the number of beds rose by a third to some 9,000. An apparent wage increase of 164 per cent over the same period was offset by the rapid depreciation of the local currency against the US dollar — the dollar increase was just seven per cent.

Tourism's present or potential contribution to the Mozambique's national economy is difficult to assess because of limited and unreliable statistics. Moreover, the country's official economy has long been paralleled by a shadow or black economy of South African rands and US dollars resulting in additional leakages. Its impact at local levels, however, is more apparent.

For instance, a South African entrepreneur has opened a beach camp site accommodating up to 400 guests about 150 kilometres south of Maputo in Ponta do Ouro, close to the South African border, an area ravaged during the civil war. The economic benefits it provides for Mozambicans are limited because of the few jobs available.⁶

Although most recent investment in tourism is concentrated in coastal areas, there are also initiatives inland. A South African enterprise, Gaza Safari, obtained a four-year licence in 1992 to operate on 10,000 square kilometres of Coutada 16 for an annual fee of 750,000 Meticais (US\$300) and additional taxes on any animals hunted.7 The total including trophies amounts to \$18,000 per year. Gaza Safari can raise its annual fee easily: as one of its camps accommodates 12 persons each paying US\$850, two days full occuption yields US\$20,400. The impact of Gaza Safari on the local economy appears to be miniscule. Depending on the season and the number of guests, the company employs 20 to 80 local inhabitants out of a population of approximately 4,200. Gaza Safari's relations with communities in the area are "not at their best" because its tight poaching control limits their access to resources such as timber, firewood, and wildlife for household consumption.8

While the economic returns for Mozambicans are slim, the ecological damage caused by some tourist projects is already considerable as tourists steer their four-wheel drive vehicles over the beach, litter the area, destroy corals and catch protected fish species. Destruction and pollution of reefs, beaches and sand dunes due to the illegal construction of holiday resorts is a constant concern of national policymakers.

The Threat of Eucalyptus

But tourist operators are not the only ones grabbing land in Mozambique. South African pulp and paper companies such as SAPPI, Mondi and Hunt Lenchers have all shown interest as well.

In 1987, for example, SAPPI proposed a 32,000 hectare eucalyptus plantation in the Matutuíne district, 150 kilometres south of Maputo to grow timber for its factory in Richards Bay, South Africa. The project was held up by the civil war, so that by 1994 it had planted only some 5,000 hectares.

Environmentalists have objected to the SAPPI project on several grounds. One was that the proposed plantation would be in one of the 240 biodiversity centres worldwide recognized at the 1992 UNCED "Earth Summit".9 Planting eucalyptus in such a sensitive region could cause irreversible ecological losses inside and outside the plantation area, they claimed. The trees' high water consumption could cause the groundwater table to drop within a few years, potentially affecting species composition in the entire area and the coastal lake system and associated floodplains. Inundated to a depth of just 10 centimetres, these are important breeding and feeding grounds for several fish species.10

Plantation critics also pointed to negative economic effects. If the groundwater table dropped, palm trees would probably disappear, ruining the local trade in palm wine from which women, older people and other local inhabitants earn up to R500 (US\$140) per month by selling it in South Africa.¹¹ People's access to land, could also be severely curtailed.

On the Horns of a Dilemma

Besides SAPPI's eucalyptus plantation, however, the Matutuíne district has also been targetted by US millionaire James Blanchard III for a massive "eco-tourist" complex at a cost of \$800 million on the Machangulo Peninsula and Inhaca Island close by. Such multiple land grabs have confronted environmentalists with an uncomfortable dilemma: defeating one proposal seemed possible only by supporting the other.

The Peninsula's densely-forested sand dunes reach down to the Indian Ocean which are full of turtles, dolphins, dugongs, rays and sharks. Under Blanchard's proposal, some 10,000 hectares, an area covering about two-thirds of the Peninsula and including a range of saline and freshwater lakes, would be set aside as a reserve which he would stock with game such as lions, buffaloes and giraffes — even though giraffes are not endemic to the area.

A major tourist attraction would be a steam train to carry passengers down the Peninsula to watch "wildlife" on the one side and the waves of the Indian Ocean on the other. Another attraction would be the 25,000 hectare Maputo Elephant Reserve to the south of the Peninsula which Blanchard has offered to rehabilitate by repairing its fence and supporting the National Forestry and Wildlife Direction's management efforts. The project proposes to expand the Elephant Reserve to the south to link with the Tembe conservation area in Kwazulu/Natal in South Africa, covering in total about 225,000 hectares.

The eco-tourism project aims to attract eco-tourists who will spend at least \$500 a day, a similar audience to that targetted by Gaza Safari in *Coutada* 16. It also aims to make profits by allocating plots of land of between 1,000 to 3,000 square metres around the lakes to wealthy people, probably foreigners, to build houses on. The rights to build will be sold under a taxfriendly construction scheme for US\$200,000 each.

The project claims that it will create some 12,000 direct jobs and an estimated 8,000 spin-off jobs. If such employment materializes, the Peninsula inhabitants, some 4,000, could well be turned into a minority because of an influx of outsiders. In addition, as two-thirds of them live in the proposed reserve, they could have to abandon their farms and move out.

Blanchard has requested a 99-year concession for the Peninsula and a 50year concession for the Maputo Elephant Reserve and the area between the reserve and the South African border. If granted, the project will be the main factor in the economic development of a significant area of Mozambique.

My Enemy's Enemy?

Blanchard is no stranger to Southern African politics. He backed Chief Buthelezi's Inkatha Movement, the apartheid regime's "black alley" in KwaZulu/ Natal, and while in Mozambique, has been an important supporter of Renamo, continuing to maintain his ties through a specially-created NGO, the US-based Mozambique Foundation for Education in Health.¹²

In early 1995, the boundaries for SAPPI's eucalpytus concession were marked out, impinging on those of the tourism project. When Blanchard found out, he declared that he would cancel his investment if the SAPPI concession went ahead. He allied himself with various groups trying to stop the eucalpytus project: non- governmental organizations such as the Endangered Wildlife Foundation (Fundação Natureza em Perigo, originally South African), Mozambican biologists, the Ministry of Environment and the World Bank (which is keen on linking up conservation areas).¹³

Whereas SAPPI claimed that it would create about 1,200 jobs in the area, Blanchard's representatives stressed that their project would create ten times as many. They said that because the plantation would be so close to the South African border, Mozambique would remain simply a source of raw materials with the value added by industrial processing accruing to South Africa. Blanchard claimed that the benefits of SAPPI's investment would probably remain limited to the wages paid to locally-recruited workers and the fee paid to the government for the use of the land.14 Almost all their arguments, however, could equally well apply to the tourism project.

The Lesser Evil?

Ironically, SAPPI's eucalpytus plantation might prove to be Blanchard's salvation. People in Mozambique are increasingly concerned with the land grabs by tourism entrepreneurs and the ecological damage caused by them.¹⁵ But by depicting eco-tourism as a lesser evil than pulp and paper enterprises, potential opposition to his project has been defused. In February 1996, the Mozambican government "unofficially" cancelled SAPPI's concession to plant eucalyptus; it has not yet, however, confirmed Blanchard's project.¹⁶

Judging by past experience, the ecological damage that Blanchard's hotel and tourist complex are likely to cause may well be much larger than observers have suggested, while the economic benefits may well be much smaller than promised. Moreover, many believe that the Frelimo-dominated government favours Blanchard's project over SAPPI's so as to improve its relations with Renamo supporters and conservative powers in the US and to broaden its own political base. The consequences for political stability are uncertain.

Trapped by the current development model, many environmentalists have seemed unable to step back from the "choices" before them and oppose both projects as being environmentally and socially destructive.

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Sci-Fi or Chomsky?

CHOMSKY'S POLITICS, by Milan Rai, Verso, London, 1995, £10.95/\$16.95 (pb) 240pp. ISBN 1-85984-011-6

For people accustomed to mainstream media reporting, Noam Chomsky's writings read like science fiction. The world he describes bears little obvious relation to the mosaic of video and sound bites we see and hear on the evening news.

What makes Chomsky seem so fantastic is that most of us have been persuaded to believe that we are basically free; to understand Chomsky, however, requires accepting that freedom cannot be an attribute of a society in which powerful state and business institutions have the means and motivation to control what we know and think.

Most of us understand that people were not free under Hitler, Stalin or under the feudal lords and kings; that black slaves were not free under white rule. We tend to picture freedom as freedom from the bang on the door in the middle of the night.

Chomsky certainly agrees that we are largely free from this type of coercion and violence, but he points out that these are only the cruder, less efficient mechanisms of control. Freedom can also be limited by psychological manipulation; by bombardment with a biased view of the world; by a view of the world filtered through the goals and requirements of concentrated economic power.

In *Chomsky's Politics*, Milan Rai does an excellent job of reminding readers just what Chomsky has actually been saying all these years beyond the invective and casual dismissal of those who malign him. In Chomsky's view, the level of energy and resources that the political left have invested in pursuing conspiracy theories, for example, surrounding the killing of President John F. Kennedy, is highly-mistaken. Such wild-goose chases are a distraction from the real point:

"Policy flows from institutions, reflecting the needs of power and privilege within them, and can be understood only if these factors are recognized."

As Rai points out, Chomsky's "propaganda model" of media control, co-written with Edward Herman in Manufacturing Consent, is in no way intended to account for some vast conspiracy to distort media reporting. The truth about Vietnam, East Timor, the Gulf War, Nicaragua, El Salvador, the former Soviet Union and Somalia is not censored by anybody. It is filtered out by market forces which act to push the media into close symbiotic relationships with state news sources (such as the White House and the Pentagon) and with large advertisers (with whom it is crucial to appear "business friendly").

In a society dominated by corporations, censorship is not required — pursuit of profit has the same effect, with the added benefit that it happens invisibly so that no one ever stops to think that something might be missing. Besides which, the media itself consists of large profitoriented corporations owned by even larger profit-oriented corporations which are owned by a wealthy elite linked to all manner of vested interests at home and in the Third World.

Chomsky's basic point, Rai argues, is that we are living in a world where centres of concentrated power pursue profit in an institutionalized way over and above human well-being. It is not a question of a "few bad guys" or misguided political parties wrecking the world, and so it hardly matters whether a Blair or a Major or a Bush or a Clinton happens to be the latest corporate PR guy — except insofar as such concerns divert attention away from the institutionalized nature of global corporate pillaging.

Corporations expand or become extinct to the extent to which they are successful in pursuing profit in a system of evolution that amounts to "survival of the most profit-oriented".

Mainstream journalism, despite the carefully nurtured but wholly implausible claim to "objectivity", is the art of presenting a version of the truth watereddown to accommodate the needs of profit and power while presenting it as the "balanced", "freely-expressed" truth. The facts may well be allowed (though often not); an honest framework of understanding from which those facts might gain meaning is certainly not.

Rai reminds us that the current Western sound bite culture is not merely a response to audience laziness and restlessness — it is because comprehensible context and relevant historical background threaten to reveal far too many uncomfortable truths (for example, that life was much better for the vast majority of people in the Soviet Union prior to the arrival of capitalism, hence the resurgence of "communism" in Russia and Poland; that President Aristide warned again and again of the "monstrous US agenda" in Haiti; and that North Korea may be a "ramshackle police state" but so are El Salvador, Guatemala and Indonesia which are supported by the West.)

The media system can and does focus our attention on various symptoms of state and corporate destructiveness: Shell's proposed dumping of the Brent Spar oil platform in the North Sea, French nuclear testing, or particular examples of Third World misery.

It is unimaginable, however, that the corporate media would even consider an interpretation of current affairs based on the idea that client dictators have been installed to maximize Western profits throughout the Third World; or that democracy at home, as abroad, is limited to options which fulfil the requirements of our corporate masters without overly stressing the illusion of democracy on which the programme depends.

Chomsky's advice has always been: if the media is focusing on an issue, it is probably irrelevant — an observation which is hardly controversial for anyone who has leafed through the colour supplement of a Sunday newspaper.

To omit such interpretations — even as just another possibility to be discussed and rejected — is as gross a violation of intellectual honesty as has ever been committed by a totalitarian censor. Yet we can imagine only too easily what would happen to an advertiser and state newsdependent newspaper or magazine if it attempted to pursue this analysis of the corporate system in a serious way. "Expert" ridicule would be heaped on abuse, and advertising and government news contacts would be withdrawn until the paper, starved of revenue, reputation and sources, would simply collapse.

Chomsky's writing is one of the few antidotes to such "brainwashing under freedom". Rai's distillation of some of his major themes is an excellent introduction and required reading for all suffering "road rage" on the information superhighway.

David Edwards

David Edwards is author of *Free to be Human*, Green Books, 1995 (*Burning All Illusions*, South End Press, 1996)

For Love of Loisaida

FROM URBAN VILLAGE TO EAST VILLAGE: The Battle for New York's Lower East Side by Janet L. Abu-Lughod, Blackwell, Oxford, UK and Cambridge, US, 1994, £15.99/\$22.95 (pb) 386pp. ISBN 1-55786-525-6

A contest over space in the district of New York known as the Lower East Side has been going on for a number of years: various competing interests - the state and its agents, property developers and local residents - have been engaged in a sequence of skirmishes in an attempt to control the housing supply and composition of the area. These interests are all mobilized around a crucial issue relevant to most cities in the Western world today: to what extent is "gentrification" - upgrading or replacing low-income housing for middle-income or "yuppy" incomers - a desirable, or indeed an achievable, objective?

A growing body of literature debates the causes and consequences of this process, addressing not only the benefits to the gentrifiers, sometimes seen as urban pioneers, but also the disbenefits to existing residents who, far from gaining from any trickle-down effect, are frequently displaced into poorer housing.

What is different about *From Urban Village to East Village* is its attempt to explain how gentrification is influenced by both economic and political forces and by locally-contingent factors arising from the history of, and population flows to, the area.

From the mid-nineteenth century onwards, successive waves of migrants — Irish, German, Eastern European, Italian, African-American, Latin American, East Asian and most recently Puerto Rican have created a diversity of cultural traditions in the Lower East Side. The area is thus made up of several overlapping communities rather than a single distinctive one with a shared identity which might designate it an urban village.

In an effort to understand the complexity of the Lower East Side, a group of academics ranging from professors to graduate students from different academic disciplines held regular seminars at the Centre for Research About Lower Manhattan. From Urban Village to East Village is the fruition of their discussions. It is marked by a refreshing acknowledgement of the ethnocentric bias of much academic research and a desire to avoid the arrogant and patronizing explanations and recommendations that often ensue.

The various players who have a stake in the Lower East Side are described, sometimes ambiguously, in the book as "housing reformers", "Wall Streeters", "white ethnics", "Latinos", "flippers", "moms and pops" and "homesteaders", as well as more explicitly in terms of developers, students, artists and squatters. Each group has its own interest and commitment to the area which is sometimes in harmony with other groups, sometimes in opposition. If this book demonstrates anything, it is that conditions can be improved and concessions won if differences can be overcome and action taken in concert to negotiate with those in power.

The collection makes a significant contribution to the analysis of competition over residential space. Some papers are contextual, setting the scene in terms of the geography and built environment of the area, or the cycles of the national economy.

This background information contributes to an understanding of how the location and topography of Lower East Side have contributed to its anomalous position in the ecology of New York City. Its existence as a pocket of poor land and poorer housing has made it a haven for penniless migrant workers, while its poor image and the enormous capital investment needed to bring it to the standards of the surrounding high rent areas have militated against its incorporation into the steady growth of the rest of the city.

The economic stability which might have permitted such investment was compromised by fiscal crises in the City in the mid-1970s and late-1980s. These led first to landlords abandoning properties so as to avoid taxes and later to the withdrawal of developers who had been encouraged to build or upgrade properties in the more prosperous mid-1980s.

Other papers in the volume are mainly descriptive, such as the account of the

violence that erupted in the main park of the Lower East Side or of the situation of the homeless.

Tompkins Square Park has always been the focus of contest between the city and its residents over issues as diverse as protests about the Vietnam War to the implementation of a park curfew. The occupation of the Park by the homeless acted as a tangible symbol of the housing crisis in the Lower East Side and aroused conflicting emotions, from active support to sympathy to outright hostility. In 1989, the authorities attempted to dislodge the homeless from their tents and shanties in the park, but failed to do so. In 1991, a violent campaign of almost military proportion succeeded in evicting the homeless and closing the park entirely.

A real grasp of the complexities of this vibrant, ever changing and heterogeneous community of the Lower East Side can only be derived from a complete reading of the book. It is only then that one begins to comprehend how certain groups, such as the homeless, and certain spaces, such as Tompkins Square Park, have come to represent symbolic markers around which a protest standing for the wider inequities of society is mobilized.

Where the macro and micro level perspectives are brought together, notably in the six chapters by Janet L. Abu-Lughod herself, the importance of grasping the linkages between the various processes involved become more clear. For example, action taken in the local space is not in itself deterministic; it takes place within the sphere of influence of political and economic events going on not only in New York City, but also in the national and increasingly international context.



For those without institutional power, the neighbourhood is the main, and often the only, effective sphere of action. It is also closely bound up with identity. The threat of, at best, fragmentation and, at worst, destruction which is implied by the invasion of such neighbourhoods by more powerful outsiders is always likely to be vigorously resisted.

From Urban Village to East Village contributes to an understanding of similar processes of conflict and displacement in poor neighbourhoods throughout the world. But it is inherently an academic work. Some contributors do reveal where their sympathies lie, but the overall intention is to portray an objective and detached reality. Those looking for an impassioned account of the plight of the homeless and the dispossessed which argues the case for resistance and reform should look elsewhere.

Bridget Franklin

Bridget Franklin is a Research Fellow in the Department of City and Regional Planning at the University of Wales, Cardiff.

Ozone Politics

OZONE DISCOURSES: Science and Politics in Global Environmental Cooperation, by Karen T. Litfin, Columbia University Press, New York, 1994, \$18/ £12.50 (pb), 257pp. ISBN 0-231-08137-5.

In *Ozone Discourses*, Karen Litfin provides a compelling theoretical argument to contradict the common perception that scientific consensus is the source of political consensus and international environmental agreement.

She demonstrates that the relationship between science and policy, between sci-

entists and policymakers, is, in fact, multi-dimensional. Knowledge influences power, but power also influences knowledge. A country's material interests determine what knowledge it accepts — but what knowledge it accepts determines its interests.

Litfin seeks to understand the dynamic interaction of science and politics, of knowledge and power, in international environmental negotiations. Her arguments are located within a larger debate taking place within international relations theory. "Realist" scholars in the debate view the outcomes of international interactions solely as the result of military and economic power and interests, with international cooperation inhibited by the anarchy-inducing dynamics of selfhelp.

"Institutionalist" scholars, meanwhile, agree with the realists that power and interests play important roles but they also view states as capable of developing cooperative institutions and rules — "regimes" — to mitigate the effects of anarchy and achieve better outcomes than they could by acting individually.

"Reflectivist" scholars who have recently joined the debate argue that norms, ideas and knowledge also influence international outcomes.

Litfin takes all three schools of thought to task for dichotomizing and separating these factors. She maintains that comprehending the dynamics of interaction between states requires examining how power, interests, institutions and knowledge are all "mutually interactive." Theories of unidirectional causality fail to capture a world of multi-dimensional interdependencies and causalities.

Litfin grounds and illustrates her theoretical argument with an exhaustive and excellently-documented analysis of the negotiations to regulate ozone-depleting substances. Even those who disagree with her interpretations will find this book an invaluable resource because of the phenomenal detail.

Using primary documents and interviews with the main negotiations, Litfin frames the empirical section of *Ozone Discourses* as a response to claims that:

"the ozone regime grew out of efforts by an epistemic community [of scientific experts] to forge a political consensus on the basis of science".



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She problematizes this alleged relationship in which science is logically prior to, and outside of, politics, stressing that:

"The path is much more circuitous than one proceeding directly from knowledge to policy consensus".

Facing environmental uncertainty, politicians do turn to scientists for advice on the environmental impacts of current policies and available alternatives. But politicians also drive science. Scientists do not simply identify and provide impartial, objective "facts" about the world. They are not "above the fray of social and political conflict", providing some inherently more "rational" basis for policy. Information is framed and interpreted within pre-existing discourses.

"In policy controversies, information begets counter-information. Knowledge is embedded in structures of power". Because states perceive scientific discourse as a "universal legitimator," scientists become knowledge brokers. The way they define the "problem," establish their research agenda, assess the probability and cost of consequences, and determine the "viability" of alternatives, creates a discourse that shapes and constrains the choices policy makers and publics have.

But it is not scientists alone who dictate the discourse for a problem. Rather, supporters of a given policy cloak their positions with the mantle of science. What gets accepted as knowledge reflects the interests of the most powerful states. The process of selecting, ignoring, framing and interpreting scientific facts "delimits the boundaries of legitimate discourse", soon making these "facts" indistinguishable from political values. The discourses extant at any point in time reflect the interaction of the mindsets, values and material interests of the scientists themselves, the policy makers using and abus-

ing scientific advice, and contextual factors such as environmental crises or scientific discoveries.

In this last category, and central to Litfin's argument, is the claim that the discovery of the hole in the ozone layer over the Antarctic forced a dramatic shift from a dominant anti-regulatory discourse to a precautionary one. Litfin claims that the ozone hole did not simply provide new scientific evidence to a static policy process, but in fact altered the discourse by which negotiators derive policies from such evidence.

The impact of the ozone hole came not from clarifying environmental risks but from clarifying the inability of scientists to know those risks with any certainty. Heightened public perception of the inherent uncertainty of scientific knowledge in this area forced negotiators to take a new, precautionary approach to uncertainty and risk, rather than an actuarial approach that tended to reinforce business-as-usual.

Litfin draws our attention to the power that discourse wields by constraining policy debate, legitimizing certain values, interests and knowledge, while delegitimizing others. What scientists know becomes of less import, while how that knowledge is "framed, by whom, and on behalf of what interests" becomes central. As we enter a post-industrial information order, power increasingly devolves from those who control material resources to those "most proficient at controlling and manipulating informational resources". Knowledge and power become increasingly intertwined.

Ozone Discourses poses a serious challenge to both the theoretical and empirical literature on international environmental negotiations. It will, however, disappoint two readerships. Litfin's complex and contingent narrative will disappoint those seeking a simple causal explanation of the "success" of the Montreal Protocol negotiations and its generalization to other cases. As she admits, her discursive approach cannot provide the parsimonious or generalizable explanations such readers desire.

The book will also disappoint those with a policy bent. Litfin claims that negotiating international environmental regimes requires careful choices of "discursive strategies," but she fails to delineate what strategies are available and how to choose among them.

Litfin has shown us that discourse matters. She has not, however, shown us what discourses to choose, and how to induce the discourse shifts needed to "save us from environmental ruin." But Ozone Discourses will challenge even these readers to re-examine how well we understand science's relationship to policy.

Ronald B. Mitchell

Ronald B. Mitchell is Assistant Professor of Political Science at the University of Oregon and author of *Intentional Oil Pollution at Sea: Environmental Policy and Treaty Compliance.*

BOOKS DIGEST

 POWER OF DEVELOPMENT, edited by Jonathan Crush, Routledge, London and New York, 1995, £14.99/\$19.95 324pp. ISBN 0-415-11177-3.

Post-colonial, post-modern and feminist thinking have focused on the power structures embedded in global development, challenging the ways in which development is conceived and practised and questioning its meaning. This collection of essays and case studies weaves together all three critiques to explore the languages and practices of development discourse, and how and why it changes over time.

 RESISTANCE TO NEW TECHNOLOGY: Nuclear Power, Information Technology and Biotechnology, edited by Martin Bauer, Cambridge University Press, Cambridge, 1995, £50/\$74.95 (hb) 422pp. ISBN 0-521-45518-9.

The essays in this volume compare changing resistance in Europe, the US, Japan and Australia to three post-war technologies. The book's thesis is that, far from being simply a nuisance to "progress", resistance gives a certain technology its particular shape in a specific context.

 NATURE'S BODY: Gender in the Making of Modern Science, by Londa Schiebinger, Beacon Press, Boston, 1993, \$25 (£19.99, Airlift Books, London) (hb), 224pp. ISBN 0-8070-8900-1.

When plants were discovered to reproduce sexually, 18th century botanists ascribed to them passionate relations, polyandrous marriages and suicidal incest (but never homosexual liaisons). Schiebinger's humorous and meticulous account details how the "fathers" of modern science incorporated their intertwined assumptions about gender, sex, race and class into their classifications and descriptions of plants, animals and people with disturbing implications for science today.

 JOURNEY TO CHERNOBYL: Encounters in a Radioactive Zone, by Glenn Alan Cheney, Academy Chicago Publishers, Chicago, 1995, \$20 (Gazelle, Lancaster, UK, £18.50) (hb), 191pp. ISBN 0-89733-418-3.

This travelogue account of a 1991 visit to Ukraine records conversations with scientists, journalists, refugees, engineers, parents of sick children, government officials, doctors and people living just a few kilometres from the Chernobyl complex to give a grassroots perspective on issues of nuclear power, public safety and government accountability.

 ELEPHANTS AND WHALES: Resources for Whom?, edited by Milton M. R. Freeman and Urs P. Kreuter, Gordon and Breach Science Publishers, (International Publishers Distributor, Reading) 1995, £20/\$30 (pb), 321pp. ISBN 2-88449-011-6.

"Mediagenic megafauna" — elephants and whales — are accorded different "values" by local subsistence hunters, ivory traders, tourist operators, Western conservationists and transnational food companies. These essays explore the influence on conservation strategies of these markedly different, often conflicting, values.

 DIGITATIONS: A Battery of Mind-Blowing Number Crunchings from the Cutting Edge of Eco-Paranoia, by Rowland Morgan, Michael O'Mara Books Ltd, London, 1996, £4.99 (pb), 190pp. ISBN 1-85479-639-1.

By the year 2005, Americans will be spending almost 8,000 centuries each year sitting in stopped traffic. Coal-fired power stations waste two-thirds of their energy. This anthology of statistics is a telling social and ecological commentary on the ironies and inefficiencies of the consumer society.

Any book reviewed in *The Ecologist* can be ordered from WEC Book Service, c/o The Wadebridge Bookshop, 43 Molesworth St., Wadebridge, Cornwall PL27 7DR, UK. Fax: 01208 815705. For p&p, please add 15% (20% outside UK) of total cost to order.



Expertocracy & Infotainment

I read with great interest the articles "Whose Knowledge Counts?" and "Democracy for Hire" (Sept/Oct 1995) which described how initiatives aimed at strengthening public debate are misused.

I observed a striking example of this type of "democracy" during the sixth congress of the Dutch Biotechnology Society in March this year. During a session on the social aspects of biotechnology, for instance, three technocrats kept the audience busy, so that the real issues were not addressed.

The evening meeting was a clear example of the dangerous combination of expertocracy and infotainment. Two experts first informed the audience of over one hundred people what they should think about novel food and gene therapy. Their message was clear: there are no real dangers, biotech products are absolute safe for consumers, and gene therapy is the way of the future. A panel of five "experts" — no people's or NGO representatives — was then invited to react. Unsurprisingly, the panel did not comment on what the two experts said.

Then there were questions from the audience — 25 questions to be answered in less than an hour — which is where the moderator came in. Far from being neutral, he made jokes, made questioners look ridiculous and confirmed biased opinions. The panel would only answer questions about biotech products, not the ways in which they are produced. So any queries about the impact of biotechnology on the Third World or the environment were labelled as "irrelevant".

Even the ethicist confirmed this "neutral" view of technology: he stated that it is possible to evaluate a technology separate and apart from concrete developments and consequences. The "expert in genetics", meanwhile, told the audience that there was no likelihood of experiments in germ line therapy being carried out because every sensible researcher condemned such experiments. This reminded me of the cloning of human eggs which we were assured would never take place because everybody was against it. It has, of course, been carried out with the justification that experiments will strengthen public debate.

At the end of the meeting, the moderator sang a song making fun of the Dutch environmental movement and repeating almost word for word the statements of the two first "experts": biotech products are safe and gene therapy is the way of the future. The audience were charmed by this performance, giving warm applause. The public meeting was transformed into harmless light entertainment, a perfect example of the neutralizing role of infotainment.

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Very Local Power

Your editorial "Who are the Realists?" (July/August 1995) was right on target. The desire of the major environmental groups to cuddle up to the powerful and the inability of activists to question the system they hope to change has become painfully obvious to many of us in the trenches. However, it appears that *The Ecologist* has fallen victim to the very problem you reveal.

There is one realm of power that even those who appear radical compared to mainstream environmentalists refuse to back away from: use of the products and services of industrialization. The ultimate power *does* rest at the local level. However, it is even more local than the editorial claims. It rests *within* each of us to buy or not to buy, to use or not to use, to watch or not to watch, to think or not to think. This is the landscape which is the final proving ground for the powerful elite. And yet, we all seem willing enough to surrender it.

In your conclusion, the editorial points to local activists who have been most successful at "opposing dams, toxic waste dumps, roads and forest master plans". All of these are defensive battles and will merely forestall the inevitable. They serve only to force corporations to go elsewhere, to seek alternative materials and methods; they serve only to educate them to the need to infiltrate and retrain the local level still further. But they do nothing to *eliminate* the need for such activity.

We *have* the ultimate power to eliminate that need. We must regain a lifestyle that forgoes the need for the "goods" (bads) or services of corporations and the governments they have bought. We must not only organize against roads, but organize a way of life that eliminates the need for cars and driving; not only against forest master plans, but against a lifestyle that necessitates paper and wood. Until we do so, corporations and governments will retain the ultimate power. When we act as though we cannot do without them, how can we ever hope to eliminate them?

I recently attended the International Forum on Globalization "Teach In" in New York City. It was an invigorating gathering of activists determined to end the globalization of corporations and economies. For lunch, attendees guzzled Minute Maid orange juice (a Coca-Cola product from juice concentrate grown and shipped from Brazil), Pepsi (cola from West African plantations on former rainforest land, using massive amounts of chemicals, manufactured by PepsiCo, one of the worst global offenders) in aluminium cans (from Australia or Venezuela, necessitating World Bank loans for hydro dams and bauxite mines) and coffee (perhaps, also from Brazil, grown on cleared rainforest with even more chemicals than the cola) in disposable paper cups (from pulp clearcut from old growth forests in Eastern Canada).

Indeed, activists seem to feel that since we are the ones "doing something" about the problem, we are exempt from making the ultimate changes and actually doing what we tell others is needed.

This epitomizes why this "movement" is no longer one. We have been trained by so-called "civilized" culture to believe that we need the products of development. That is the ultimate victory of corporations over activists. If we are forever unable to question their raison d'être and live and model alternatives, then we will be forever trapped in the boxes they have built.

Power resides in many hallways. We seem unwilling to battle in the nearest, most readily accessible hallway and the one in which change is the longest lasting: the hallway of our minds.

Tim Keating

Director, Rainforest Relief Coordinator, Alliance to Reduce Consumption <relief@igc.apc.org>

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DIARY DATES

3 May 1996: CHILDREN, YOUNG PEOPLE, COMMUNITIES AND THE ENVIRONMENT, Manchester Town Hall. For more information, contact Lynne Wood, CDF North, Vassalli House, 20 Central Road, Leeds LS1 6DE. Tel: 0113-246 0909; Fax: 0113-246 7138.

5 May 1996: MASSIVE URBAN LAND OCCUPATION. Large amounts of land in cities all over Britain are vacant or derelict. Hundreds of activists will converge on one such area in London, turn it into a sustainable village and hand it over to people who want to live there. Coaches leave 10am from 190 Shepherds Bush Road, London W6. For more information, contact George Monbiot, **The** Land is Ours, East Oxford Community Centre, Oxford, OX4 1DD. Tel: 01865-722016.

12 May 1996: PUBLIC FORUM OF THE MIN-ING & INDIGENOUS PEOPLES CONSULTA-TION, 11 am-5pm, Kings College Great Hall, The Strand, London WC2R. Indigenous peoples from around the world speak out about the mining activities increasingly enroaching on their lands. Contact Minewatch, 54 Camberwell Road, London SE5 0EN. Tel: 0171-277 4852; Fax: 0171-277 4853.

11 May 1996: 1st North East of England FESTI-VAL OF ENVIRONMENT, Palace Green, Durham, 9.45 am - 5 pm. Speakers, including David Bellamy, workshops, discussions. For further information, contact Shirley Cass, Northumbrian Water Group, Chainbridge Road, Blaydon Haugh Industrial Estate, Blaydon, Tyne & Wear, NE21 5TA. Tel: 0191-414 6677.

17-22 June1996: PAVED TO PROTECTED; RESTORATION IN THE URBAN/RURAL CONTEXT, Rutgers University, New Brunswick, NJ, and New York/New Jersey, USA. For more information, contact Society for Ecological Restoration Conference, 1207 Seminole Highway, Suite B, Madison, WI 53711, USA. Tel: +1 (608) 0262 9547; Fax: +1 (608) 0265 8557; E-mail <ser@vms2.macc.wisc.edu>

4-6/7 September 1996: Interdisciplinary Symposium RESPONSIBLE ENVIRONMENTAL BE-HAVIOUR, Berne, SWITZERLAND. For more information, contact IKAO, Universitat Bern, Falkenplatz 16, CH-3012 Bern, SWITZERLAND. Tel: +41(31)631 3958; Fax: +41(31)631 8733; Email <info@ikaoe.unibe.ch>

26-28 September 1996: NEW EUROPE: Transformation and Environmental Issues, Bratislava. For further details, contact Dr Martina Vagacova, Academia Istropolitana, Hanulova 5/b, 840 02 Bratislava 42, SLOVAK REPUBLIC. Tel: +39 (49) 875 6788; Fax: +39 (49) 875 6788; E-mail <envir@acadistr.sk>

BOOKS

Free Compost For Life. *THE ORGANIC COM-POST GUIDE* by Evangeline Bliss and Jack Villiers. £10 including postage and packing from Millwater Publishing, Liss Business Centre, Liss, Hampshire, GU33 7AW. Fax: 01703-895 232.

WORLDWATCH PAPERS

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Janet N Abramovitz: IMPERILED WATERS, IMPOVERISHED FUTURE: The Decline of Freshwater Ecosystems. 80pp, £3

Please note that all orders for Worldwatch Papers should now be sent to The Ecologist, Agriculture House, Bath Road, Sturminster Newton, Dorset, DT10 1DU, UK.

COURSES

CEMP Training Programme, Aberdeen, SCOT-LAND. July/August 1996 Environmental Assessment and Management; September 1996 Impact of Major Events. For further information, contact Professor Brian D Clark, CEMP, AURIS Business Centre, 23 St Machar Drive, Aberdeen, AB2 1RY, SCOTLAND. Tel: 01224-272483; Fax: 01224-487658; E-mail <cemp@abdn.ac.uk>

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Hans Heerings and Ineke Zeldenrust, ELU-SIVE SAVIOURS: Transnational Corporations and Sustainable Development. Can the international corporate community become the saviour of the environment? 112pp, paperback, 1995, £9.99.

John Cavanagh (ed), BEYOND BRETTON WOODS: Alternatives to the Global Economic Order. This book reflects on the impact the World Bank and International Monetary Fund have had on the peoples of the world and offers new strategies of development that would put ecological sustainability at the forefront.

238pp, paperback, 1994, £12.95.

Worldwatch, **STATE OF THE WORLD**. The annual report by Lester Brown and the WorldWatch Institute. Contains 10 separate studies on such issues as the Earth's carrying capacity, a plan to save the world's forests and the reshaping of the power industry. 360pp, paperback, 1996, £9.95.

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257pp, paperback, 1995, £15.95.

Peter Georing, Helen Norberg-Hodge, John Page, FROM THE GROUND UP. The evidence for those seeking an overview of existing problems — from excessive use of fertilizers and pesticides through to the use of animals in intensive systems and the loss of family farms. The impending dangers associated with GATT and biotechnology 120pp, paperback, 1993, £10.95.

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