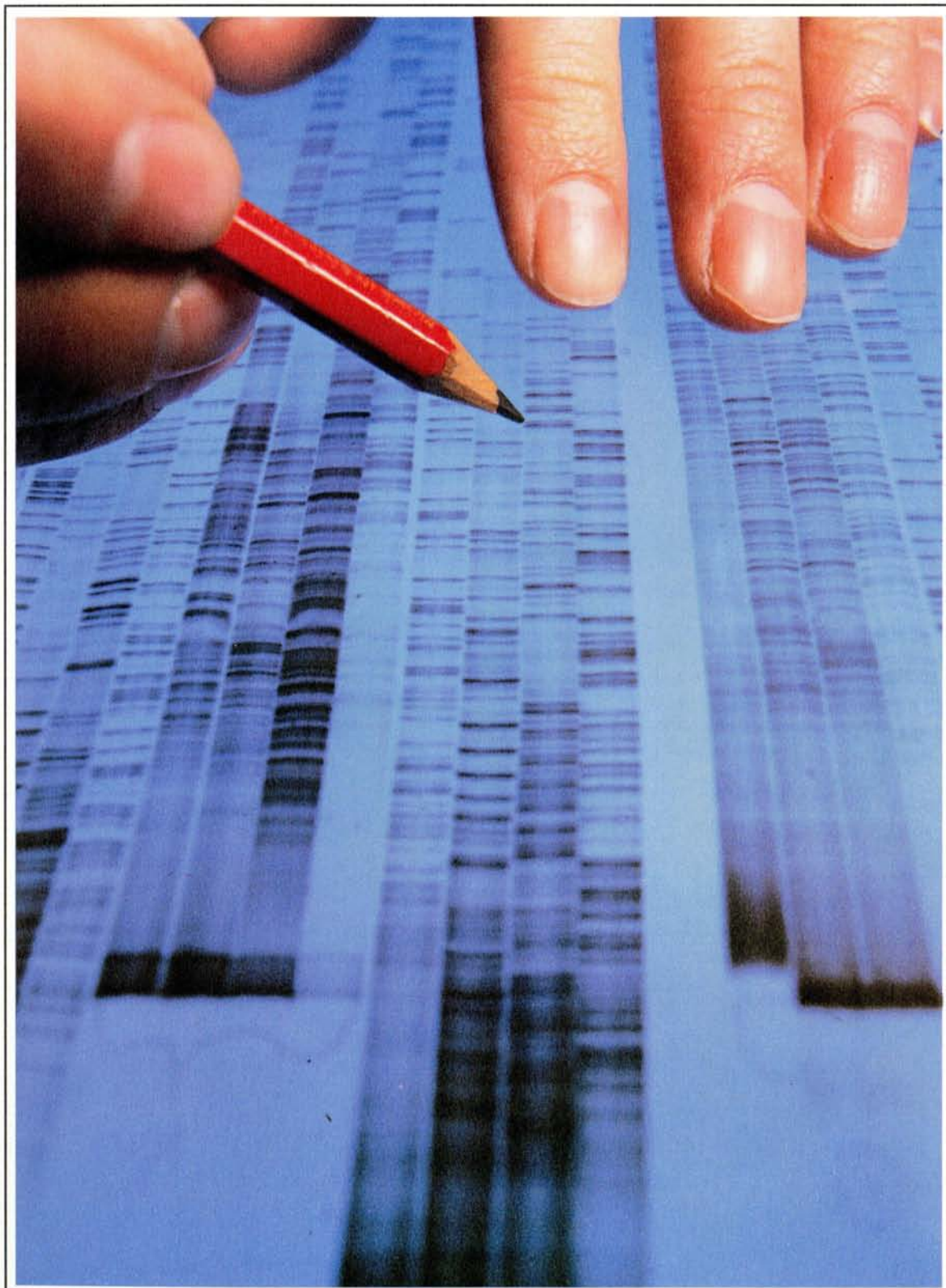


# The Ecologist

Vol 23 No 5 September/October 1993

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# The Ecologist

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Cover: Scientist checking a DNA sequence (Sinclair Stammers/Science Photo Library).  
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# Breast Cancer Trials

## A Chemical Smokescreen

Breast cancer is the most common cancer among women in the world. In industrialized countries, incidence has increased steadily for most of this century to reach epidemic proportions. While various cancer-related organizations have no doubt helped women to cope with breast cancer, death rates from the disease are not falling, despite screening with mammograms and improvements in surgical and auxiliary treatments, and despite over \$1 billion spent over the past two decades by the US National Cancer Institute on breast cancer research. In industrialized countries, it is the leading cause of death in women aged 35-54, mortality rates increasing with age.

The natural history of breast cancer is closely related to exposure to the hormone, oestrogen. It appears to be the common link for factors as diverse as genetic, reproductive, dietary and pharmaceutical (oral contraceptives and hormone replacement) which increase breast cancer risk. Growing evidence implicates a wide range of environmental pollutants which alter oestrogen metabolism. These "xeno-oestrogens" include certain pesticides and herbicides; polycyclic aromatic hydrocarbons (PAHs) present in automobile exhausts and incinerator emissions; polychlorinated biphenyls (PCBs) used in plastics and electrical insulation; and benzene. A wide range of pharmaceuticals, such as the contraceptive Pill and synthetic oestrogens once used to fatten livestock, are present in the water supply. Exposure to ionizing radiation from nuclear explosions, excess medical irradiation and leaks from nuclear power stations also seem to contribute (see pp.192-193).

Without effective treatment, the only realistic strategy for cancer control has to come from research into the multifactorial causes of breast cancer and into primary prevention. This should include intervention to prevent or limit exposure to environmental carcinogens.

But received wisdom among the breast cancer establishment holds that little can be done in primary prevention — little short of a "chemical fix". Nowhere is this illustrated more clearly than in the July decision by the UK Department of Health to give the go-ahead for a controversial trial involving the drug tamoxifen. Combined with similar trials in the US, Italy and Australia, some 53,000 women will be recruited; every day for five years, about half of them will take a placebo, the other half a 20mg dose of tamoxifen, a complex chemical which partly blocks the action of oestrogen in the breast and partly mimics it elsewhere in the body.

Tamoxifen has been used in the treatment of some three million women with breast cancer worldwide since the 1970s. Relatively benign in the slash-and-burn world of cancer therapies, it is known to reduce the chance of cancer developing in the second breast, and to prolong survival and delay recurrence in 20-30 per cent of women with primary breast cancer. There is some justification, therefore, for women with breast cancer to take the drug, although there is relatively little data on the effects of the long-term use of tamoxifen — most women with breast cancer have not taken it for more than two years while fewer than 4,000 women have taken tamoxifen for more than five years.

But the women recruited for this trial do not have breast cancer. The trial is not about treating breast cancer, but is intended to reveal whether tamoxifen may prevent the disease from developing in healthy women perceived to be at twice or

more the "normal" risk of developing breast cancer because of a family history of the disease or pre-cancerous changes in the breast. All this is despite the fact that some 60-70 per cent of all breast cancers — the majority — occur in women who do not fall into any of the risk factor categories.

### Disease Substitution

These tamoxifen trials are thus an unprecedented experiment on healthy women who will be exposed to tamoxifen's known toxic side-effects: studies indicate a three to seven-fold increased risk of cancer of the lining of the womb and potentially fatal blood clots, and increased risk of vision problems related to the retina, hepatitis and liver cancer. (Eighteen months ago, the Medical Research Council pulled out of the UK trial because of its concern that tamoxifen may cause liver cancer, leaving the remaining partners in the venture, the Imperial Cancer Research Fund and the Cancer Research Campaign, to press on regardless.) There are in addition a host of "minor" side-effects including menopausal symptoms, hot flushes, vaginal dryness, menstrual irregularities, weight gain, headaches, nausea, depression, loss of sexual desire and dizziness.

There is little data on tamoxifen's effects on healthy, young and middle-aged women who are hormonally different from post-menopausal women and thus may have an entirely different reaction to the drug. The prevention of a second cancer in women who already have breast cancer may have little relevance to prevention in healthy women who do not have breast cancer at all. A Medical Research Council doctor has stated baldly "We do not know what will happen to a normal population of women, with no breast cancer, over long periods of time." The medical establishment may well find out — the trial is clearly in their interests (and those of the pharmaceutical industry) — but at the possible expense of the health and quality of life of those women participating. It would seem that the lessons of diethylstilboestrol (DES) have not been learned. Several million women were given DES between 1945 and 1971 to prevent miscarriage. The drug's legacy only emerged years later: DES daughters have an increased risk of rare vaginal cancer, while sons face a range of reproductive problems including abnormal small testes, decreased sperm counts and testicular cancer. Tamoxifen has not been fully screened for birth defects.

The results of the trial may not, therefore, be as expected — indeed, tamoxifen has surprised scientists before. Early studies in the 1960s led the drug's developers, ICI, to believe that tamoxifen would be an effective contraceptive. It was — in rats. In women it had the opposite effect, stimulating ovulation.

While many of the side effects and risks of tamoxifen may be worth a woman taking if she has breast cancer, the risk/benefit equation a healthy woman is being asked to evaluate is considerably different. Women at a perceived risk of breast cancer who are not sick will have to weigh up the risk of breast cancer with the risk of other cancers and likelihoods of the "minor" side-effects.

Women would now seem to be exempt from one of the basic principles of public health — that intervention should not harm. A description of the US trial — "premature in its assumption,



weak in its hypotheses, questionable in its ethics, and misguided in its public health ramifications" — is as valid in the UK.

It is increasingly regarded not only as acceptable but even as "normal" to manipulate female hormones with the Pill, hormone replacement therapy, fertility drugs and hormonally-assisted pregnancy in post-menopausal women. Now healthy women will take tamoxifen which will induce menopausal symptoms but which may protect them against a cancer they may never get — while other healthy women who experience menopausal symptoms take hormone replacement therapy which will alleviate these symptoms, but which may increase their risk of breast cancer.

In a society which considers oral hormonal contraception for men unacceptable because of its dampening effect on libido, a drug with harmful physical side effects would not even be considered for the prevention of a male disorder. Dr Richard Nicholson of the *Bulletin of Medical Ethics* has described the tamoxifen trial as having less value than castrating middle-aged men to see if it prevented prostate cancer, but "they would rather do these sex hormone tests on women because most of the people leading them are middle-aged men."

## Time to Act Up

The politicization of breast cancer in the United States, the country with the highest incidence of the disease, indicates that the future is not entirely bleak. Growing intolerance of medical inertia in the face of some 180,000 women discovering every year that they have breast cancer has spawned activism on the scale of AIDS campaigners. Women with breast cancer have organized, lobbied and become visible symbols of the disease. As Dr Susan Love says, "Women are angry that the breast cancer epidemic continues without much change, and it's crucial to focus that anger and put it to good use. Our lives depend on it".

The National Breast Cancer Coalition has rattled the research establishment to such an extent that funding for breast cancer has doubled — \$210 million of it was deflected from the defence budget. The Coalition and other groups are demanding a national strategy to end the breast cancer epidemic by, as a first step, placing greater emphasis on basic science and prevention.

Without this, the breast cancer epidemic looks set to rise. It will claim the lives of one million women annually by the year 2000, not all in industrialized countries. Although currently a

Western disease, breast cancer incidence is predicted to increase sharply in developing countries over the next two or three decades as lifestyles and postponed childbearing of fewer children — some of the accepted risk factors — become more Westernized. The North's current solutions to the epidemic, particularly mammographic screening and chemical fixes such as tamoxifen, are financially out of bounds to the South, and likely to remain so for the foreseeable future. The debt-ravaged, structurally adjusted South is clearly sitting on yet another time bomb. While there is no question that genuine reproductive choice can improve the health of women and children enormously and reduce mortality among both, all too often family planning is implemented with scant regard to its impact on women's health. Oral contraceptive use, which has increased considerably throughout the developing world, may increase the risk of breast cancer when used for prolonged periods by young women or before a first full-term pregnancy.

Aggressive marketing by the baby milk powder industry has led to a decline in breast feeding which is protective against breast cancer. Although the WHO/UNICEF Code of Marketing Breastmilk Substitutes has reversed this decline somewhat, reports that GenPharm International plans to sell bio-engineered human proteins, produced in the milk of transgenic cows and approximating the "gold standard" of mothers milk, to the infant formula industry has renewed concern over the future of breast feeding.

The global increase in breast cancer incidence is not imaginary and primary prevention must not be consigned to fantasy. The global increase cannot justify seeking a magic bullet which increases the risk to individual healthy women by possibly exchanging one cancer for another; instead the carcinogenic influences at large in the environment must be addressed. Women born and raised in the US are five times as likely to get breast cancer as women born and raised in Japan — and Japanese women increase their risk when they emigrate to the US. Something in Western women's lives — diet, lifestyle or environment or a combination of all three — dramatically increases their risk of breast cancer. It is not lack of tamoxifen. We must not allow the tamoxifen trials to become a smokescreen against acting to prevent breast cancer in the first place.

Cathy Read

*Cathy Read is a doctor and freelance journalist specializing in women's issues and environment issues who is currently writing a book on breast cancer, to be published by Pandora Press.*

## Time to Retreat

In June 1943 the Missouri river burst its banks for the third time that year. The Omaha office of the US Army Corps of Engineers — which has been in charge of "flood control" in the United States since the late 19th century — was nearly flooded. Its regional director, Colonel Lewis Pick, was not amused. "I want control of the Missouri River!" he is said to have screamed at his staff. Half a century and billions of dollars worth of Corps of Engineers' dams and levees later, the Missouri went on the rampage yet again this July, with disastrous effect.

The Corps of Engineers has spent \$25 billion on dams, embankments and other "structural controls" in its war against floods over the last 65 years. Yet the financial cost of flood damage in the US has risen steadily during this century. In 1937, floods cost \$300 million; 40 years later the bill had soared to \$3.5 billion and was rising at an annual rate of four to seven per cent after allowing for inflation. The number of deaths caused by

flooding has also increased. Other "hidden" costs of the military campaign against floods have included the displacement of native people — Colonel Pick's plan to control the Missouri submerged the best remaining lands of three Native American tribes yet took "extraordinary care not to inundate any of the white towns . . . along the river" — the permanent submergence under reservoirs of some of the country's best farmland and wildlife habitat; and the destruction of huge areas of river, wetland and floodplain ecosystems.

This year's floods along the Missouri and Mississippi have taken 50 lives, made almost 70,000 people homeless and caused an estimated \$12 billion in damage to property and crops. More than 800 of the 1,400 levees or embankments in the nine states affected by the disaster were topped or breached and several reservoirs overflowed. The cost of repairing the damage to the levees and dams has not yet been calculated but it is

clearly huge: even in a "normal" year embankment repairs on the lower Mississippi cost \$1 million per mile.

There are a variety of reasons why, although structural controls reduce the frequency of floods, they worsen their severity. By containing the river and straightening its course, embankments and other methods of canalization speed up the flow of the river, increasing its capacity to do damage downstream. Embankments also prevent the floodplain from absorbing floodwater. The great Mississippi flood of 1973 resulted from rainfall that was only 20 per cent above "normal" and below that which caused previous less destructive floods: the levees, canals, and the paving over and draining of the floodplain had reduced the river basin's capacity to absorb floodwater. Almost certainly the main factor behind the spiralling costs of floods in the US, however, is that structural controls induce a false sense of security and encourage people to settle on the floodplains, making future disasters much more serious than if no controls had been built and the plains had been left undeveloped.

The engineers' determination to do battle against nature leads them to ignore the fact that floods are not necessarily an enemy of humanity. Floodplains provide the world's most productive farmland because they are regularly covered with the nutrient-rich mud left in the wake of flooding. Floods also recharge groundwaters under plains, and the flooding of wetlands provides a sink of water which can keep rivers flowing during times of drought, as well as providing important breeding and feeding grounds for fish and waterfowl.

By obstructing the river's normal cycle of floods, embankments confine the river's load of fertile silt within its banks. This raises the bed of the river, which means that the embankments must in turn be raised further to compensate. A typical levee on the Mississippi near Memphis, Tennessee, has increased in height from three metres in 1882 to around 12 metres today. Eventually the river level rises above the height of the surrounding plain providing the potential for disastrous flash-floods should the huge embankments break. Where there were no levees, the Mississippi rose slowly in this year's flood, giving people plenty of time to evacuate vulnerable areas: where levees suddenly broke, turbulent waves of white water swept across the plains.

A reservoir can help alleviate floods downstream by storing the excess flow after heavy rains, but only if the water level is kept low. Unfortunately for those living downstream, it is much more profitable for dam operators to keep water levels high for the purpose of electricity generation and provision of irrigation water. The ability of dams to hold back floods is also impaired by the silt which builds up behind them. About half of the sediment which once reached the Mississippi Delta is now building up behind the scores of dams built for flood control and navigation upstream. Instead of slowly fanning out into the Gulf of Mexico on a bed of silt, the delta is now being eroded at a rate of up to seven centimetres a day. In addition, the loss of silt has made the Mississippi a much more powerfully scouring river. According to Raphael Kazmann, a retired professor of hydrology from Louisiana State University, "It's just a matter of time before it eats away one of its bends [in the delta] and seeks out a completely new course." Such a new course would cut through the industrial infrastructure of the delta: Kazmann believes that "in an economic sense, such an event could be the greatest peacetime disaster in American history."

## Failing to Learn

The pattern of rising spending on flood controls mirrored by rising flood damage is not unique to the US. India has spent around one billion dollars on structural controls since 1953, yet both the area affected and the cost of damage from flooding have risen dramatically.

The record of embankments in Bangladesh is even worse

than in the US (large-scale embankment building followed a 1964 Master Plan prepared by US consultants which modelled control of Bangladesh's rivers on the battle against the Mississippi) yet proposals for the much-criticized Bangladesh Flood Action Plan are based on a lunatic scheme to spend five to ten billion dollars on up to 4,000 kilometres of massive embankments (see *The Ecologist*, September/October 1992).

Protection from floods for 10 million people living along the Yangtze River is the main reason given for China's Three Gorges Dam, another project based on the US experience of river management, with the two big US dam-building bureaucracies, the Bureau of Reclamation and the Corps of Engineers, acting as consultants. If built, it would be the biggest dam in the world in terms of power generation. The dam's many critics charge that the flood control benefits claimed for the dam are based on discredited methodology and that the dam will lead to an increase in flood damage, not least by promoting a boom in construction on the floodplains. Should the dam burst, it could cause one of the worst human-made disasters in history.

## Self-Interested Fanaticism

It is not only the self-interest of corporations seeking contracts, politicians seeking votes, or engineers and bureaucrats seeking to keep their jobs that has kept the war against rivers going for so long. The desire to dominate nature which Colonel Pick showed continues today. In a recent article, "36,000 Dams and Still More Needed", the President of the International Commission on Large Dams, W. Pircher, tells us that the natural world, with its free-flowing rivers and fertile valleys is not suitable for humans to live in, and must be made so by "the engineered infrastructure of our man-made basis of survival."

Luckily, the rantings of the W. Pirchers of this world are growing fainter. The rise of environmentalism and the awareness of ecological limits has made an increasing number of people realise that the more we try to control nature, the more it hurts us. The response to the disaster in the Mid-West has not been, as in the past, dominated by calls for federal funds for yet more dams and levees, but rather for a strategy of "flood protection" as opposed to "flood control". This would entail discouraging construction on high-risk land and allowing floodplains to flood while protecting urban areas.

In Germany, plans are underway to loosen the straitjacket on the Upper Rhine by bulldozing through dykes and allowing parts of the floodplains to flood regularly once again. The scheme aims "to combine conservation with flood protection by giving back to the remnants of the floodplain their former role as flood retention reservoirs." An official report on France's Loire river, published in December 1992, recommended that flood damage should be reduced by banning construction on the most vulnerable land. Until 1991, the floods were to be controlled by the controversial Serre de la Fare dam.

Although it can reduce the risk, no amount of flood protection will stop fields and houses getting flooded and people drowning. This would be true even if we were living in an era with a stable, predictable climate. But we live in an era of global warming (or at least an era when global warming is highly probable) when no one — meteorologists and climatologists included — can be sure how wet, stormy or sunny the world will be in 10 years, never mind 50 or 500 years.

In such an ever more unpredictable world, a planned retreat from the floodplains or a willingness to live with the floods is vital. Likewise, a retreat from the ideology that we can dominate nature is essential if we are to scale back the processes which cause global warming and adapt with the minimum pain to climate change.

Patrick McCully

Patrick McCully is an Associate Editor of *The Ecologist*.



# SLAPPs Come to Britain

The jailing of seven Twyford Down demonstrators in July was hardly a strategic success for the Department of Transport (DOT). The 28-day sentences — for breaking a court injunction banning us from protesting on the M3 motorway construction site — served only to heighten the interest of the press and the sympathy of the public. In prison, we were inundated with messages of solidarity from Britain and around the world, as well as receiving support from inmates and warders. Lord Justice Hoffman noted in court that civil disobedience was an "honourable tradition" and predicted that history would vindicate us.

Yet, whatever the tactical folly of the prison sentences, there is a more sinister aspect to the high court injunction. Its main sanction is not custodial but financial. Under its terms, all the injunctees are held "jointly and severally liable" for the legal costs and for damages. According to the defence counsel, Liz Loughran, "this means that a single individual, who may have been on the site only once . . . could be held entirely responsible for the two million pounds the DOT is claiming".

The object is clearly to intimidate protesters and their families by threatening them with financial ruin, a tactic aimed, not at young idealistic eco-warriors, who usually have no assets, but at respectable local people who feel strongly enough to make a protest. This injunction marks the arrival in Britain of what are known on the other side of the Atlantic as "SLAPPs".

## Corporate Punishment

SLAPPs — Strategic Lawsuits Against Public Participation — are an array of legal tactics developed over the last 10 years by large corporations in North America to suppress demonstrations. According to Penelope Canan and George Pring, the two University of Denver researchers who coined the term, the four classic indicators of a SLAPP are these: politically active defendants; charges of defamation, conspiracy, interference with business, or similar; huge money damage claims; and inclusion of 'Persons Unknown' as defendants.

Frequently these lawsuits are not pursued to the bitter end. In the US, "more than three-quarters of all SLAPPs are won by the citizen activists after about three years of litigation". Their object is to intimidate potential activists and groups, to "chill" them into silence.

In the last two years, SLAPPs have been vigorously pursued by multinational logging companies against local groups protesting against clearcutting in Canadian forests. MacMillan Bloedel (MacBlo) is claiming \$102,000 in special damages, plus unspecified costs and interest, against 35 people who participated in blockades of logging concessions in the Tsitika Valley on Vancouver Island. The Japanese firm, Daishowa, together with the Alberta Provincial Government, claimed \$235,000 against two Alberta environmental groups, and were awarded \$60,000.

But it is at Clayquot Sound that the legal measures taken by MacBlo most resemble those taken by the DOT at Twyford Down. Since November 1992, over 500 protesters have been arrested for defying a court injunction, and several have been jailed or fined up to \$3,000. MacBlo has also filed a claim of damages against Clayquot residents for alleged lost timber sales and other costs, and has threatened to sue all convicted protesters for damages. "They're just holding it over our heads for intimidation," says Valerie Langer, one of those served with the writ.

Information on Canadian SLAPPs from **The New Catalyst**, Winter 1992/3, PO. Box 189, Gabriola Island, BC, CANADA.

## Chilled Into Silence

This kind of monetary intimidation has been introduced progressively into the legal battle over Twyford Down. Last year an injunction was imposed against Friends of the Earth, forbidding its representatives from demonstrating on the Twyford Down site. FOE decided that they could not risk a hefty fine and withdrew from the Twyford campaign.

Also in 1992, David Croker and two other long-standing members of the Twyford Down Association (TDA) emerged from their unsuccessful legal battle against the DOT with court costs of about £20,000. According to Croker, Gerald Malone, the local Conservative MP and a supporter of the M3 cutting, suggested that these costs might not be enforced if the TDA backed down from campaigning; while at the same time Malone's local party tried unsuccessfully to sue the TDA under the Representation of the People Act. These combined threats had their effect: Malone was able to claim publicly that he had split off responsible opposition from the "less savoury elements" of the campaign.

Now, anyone named on the present injunction who has assets or a mortgage is faced with the threat of financial ruin. One respected campaigner, Dr. Chris Gilham, who has been fighting the cutting for over 20 years, has already settled out of court on the condition that he refrains from further protest, because of the anxiety that the injunction has caused his family.

SLAPPs, it seems, can be effective. The regular use of SLAPPs to quash protest has the potential to immobilize the environmental movement in the same way that the UK trade union movement has been paralysed by the threat of sequestration of its funds.

## Slapping Back

The answer in North America has been to "SLAPP back". When counter-claims are mounted against corporations, either for damage to the environment, or, as in the Tsitika Valley case, for being complicit in assaults on protesters, then SLAPPs often simply melt away. In some cases the protesters actually win their counter claims; Richard Leonardini, a lawyer, won \$7.5 million in a SLAPP-back suit against Shell Oil Company.

There are certainly grounds for SLAPPING back against the DOT on both the above counts, but as yet there are not the funds nor the support available. However, two of the Twyford injunctees have lodged appeals against the ruling: Margaret Lambert, a photographer, is appealing with the support of the National Union of Journalists; and David Plumstead, an engineer from Kent, is appealing through the civil rights group, Liberty.

We should give these appeals, and any other attempts to SLAPP back at the injunction, our fullest support. That is not to say that we should ignore the danger of spending so much time on litigation that the original issue gets forgotten. But as the struggle to force the shift to a sustainable society becomes more acute, SLAPPs will become more common. If home-owners are intimidated into silence, protest will become an option open only to those with neither assets nor mortgage — the so-called "less savoury elements". The environmental movement must do everything in its power to resist this vicious form of chequebook dictatorship.

*Simon Fairlie*

*To support the appeal against the injunction — financially or otherwise — contact David Plumstead, The Spout House, Lympne, Kent, CT21 4IQ, UK. Tel: 0303 265737.*

# Slave and Enclave

## Towards a Political Ecology of Equatorial Africa

by

Marcus Colchester

*Rural communities in Equatorial Africa are today on the point of collapse, weakened by centuries of outside interventions and considered marginal to government priorities and policy-making. Their lands and forests are controlled by state institutions which operate as patron-client networks to enrich the indigenous élite and outside commercial interests. If local people are to have secure livelihoods and the forests of Equatorial Africa — some of the most diverse on the continent — are not to be destroyed like those of West Africa, effective community control over land and forests needs to be reasserted, which will require a radical transformation in the political economies of the region.*

The three countries of Equatorial Africa — Gabon, the Congo and the Central African Republic (CAR) — are among the most urbanized in Africa, largely as a result of the resettling of rural communities in colonial times. Of a total population of five million, only some 40 per cent live in rural areas, comprising about one hundred, linguistically closely-related peoples who are described in Western anthropology as the “Western Bantu”, as well as some 120,000 “pygmies”. Those remaining in the forests are reliant on self-provisioning economies, based on shifting cultivation, treecropping, hunting and fishing.

Some 47 million hectares of closed tropical forests in the three countries, combined with those of neighbouring Angola, Cameroon, Zaire and Equatorial Guinea, make up the second largest area of closed tropical forests in the world after Amazonia. These forests are some of the most diverse in Africa, and contain an abundance of wildlife, including forest elephants, lowland gorillas, various kinds of chimpanzees, forest antelopes and a wide variety of birds.

The social and political structures of Equatorial Africa have been markedly transformed by the European slave trade, the French colonial era and by the subsequent interventions of commercial interests and the new African states. Despite the current political liberalization taking place in Gabon, the Congo and the Central African Republic after three decades of single party politics, the forests and the peoples who rely on them are still being sidelined.

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### The Slave Trade

Long before Bantu society came into contact with colonial Europeans, its egalitarian traditions — a reflection of mobile, decentralized settlements<sup>1</sup> which included an unease towards the accretion of power<sup>2</sup> — had been progressively overlain during several centuries by more hierarchical forms of social organization, resulting from warfare and competition for land. This process had gradually reduced the accountability of leaders to their people with disastrous social and, later, ecological consequences.<sup>3</sup>

The European slave trade, however, is the most obvious example of this phenomenon, during which several millions of Africans died and millions more were transported overseas. The Portuguese began the trade in slaves on the coasts of Equatorial Africa around 1580, but it only became vigorous after about 1640. The European slavers themselves, however, were minimally engaged in raiding, never going far inland. Capture was carried out by Africans which not only intensified raiding and war between local African communities but also transformed previous systems of bondage and servile working conditions into those of absolute slavery.

This meant that slaving had a profound impact not only on those communities whose members were captured but also on those engaged in the trade. To gain control of the trading network, dispersed and differentiated social groups merged their numbers and identities to increase their power and domain.<sup>4</sup> These groups were dominated by “trading firms” often comprising a chief and his sons. The increasing importance of



inheritable wealth, capital accumulation and the corresponding need to resist redistributive customs led many matrilineal societies of the middle Congo to become patrilineal. Trading firms swelled their numbers by recruiting male and female slaves as labour and as wives to produce pliable heirs devoid of inheritance rights through the maternal line.

## Colonial Repression and Resistance

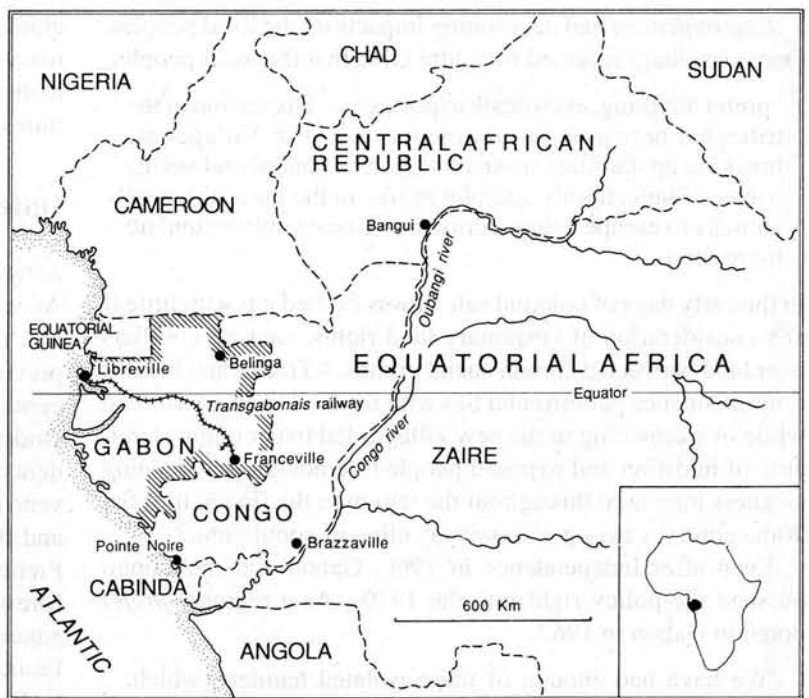
Direct colonial rule of Equatorial Africa by the French from the 1880s onwards further exacerbated the tendency towards more hierarchical forms of social organization. As the French government was unable and unwilling to administer directly the vast area of more than 700,000 square kilometres, it allocated 80 per cent of the region to some 40 companies.<sup>5</sup>

Within these vast concessions — the area controlled by the Compagnie Française du Haut Congo encompassed 3.6 million hectares<sup>6</sup> — the companies had almost sovereign control including the right to their own police force and legislation; slavery, violence, killing and inhuman punishment were widely documented.<sup>7</sup> Their express aim was to extract the natural resources — chiefly wild rubber, timber, ivory, and later coffee, cocoa and palm oil — as cheaply and as quickly as possible.<sup>8</sup>

Labour shortages, rather than shortages of land, were the main constraint of these enclave economies. To extract labour for the concession areas, plantations, road-building, portage and, in the 1920s and 1930s, for building the Congo-Ocean railroad, “man hunts” became fundamental to the colonial economy.<sup>9</sup> The military was used to support concessionaires who had insufficient labour.<sup>10</sup> In the rubber regions of Ubangi (now the Central African Republic), for example, villagers who did not manage to flee from the troops sent in to ensure their “participation” were tied together and brought naked to the forests to tap the rubber vines. They lived in the open and ate whatever they could find. A French missionary who witnessed the scene wrote: “The population was reduced to the darkest misery . . . never had they lived through such times, not even in the worst days of the Arab [slaving] invasions.”<sup>11</sup>

The colonial authorities also introduced various taxes and levies to oblige local peoples to enter the cash economy; in practice, this meant to work for the concessionaires. Along the coasts, logging rapidly replaced the trade in non-timber products, becoming the foundation for the political economy of the region. The extraction carried out with axes and handsaws, the huge logs being dragged by hand to the rivers and floated out to waiting trading ships. By the 1930s, an estimated third to one half of men from the interior villages of what is now Gabon had been brought down to the logging camps on the coast, where they worked for minimal wages and in appalling conditions for months at a time.<sup>12</sup> Disease was rife, alcoholism rampant and thousands died. Meanwhile, the workload of the women and children who remained in the villages increased correspondingly and their health too was undermined by the numerous diseases — influenza, yellow fever, sleeping sickness and venereal infections — which returning labourers brought back.<sup>13</sup>

The conscience of the colonial authorities was obviously pricked by the all too evident degradation and exploitation of the local people. As Governor General Reste noted in 1937:



“The logging camps are great devourers of men . . . Everything has been subordinated to the exploitation of the forest. The forests have sterilized Gabon, smacking down the men and taking off the women. This is the image of Gabon: a land without roads, without social programmes, without economic organization, the exploitation of forests having sapped all the living force from the country . . . There is not a single indigenous teacher, doctor or vet, agricultural officer or public works agent.”<sup>14</sup>

Those making the profits — some two billion francs between 1927 and 1938<sup>15</sup> — were a few French companies in whose hands the logging concessions were concentrated. By 1939, of the one million hectares of Gabon under concessions, 66 per cent was controlled by just seven companies with only some 84 others controlling the rest.<sup>16</sup> These companies were to play a key role in the transition to Independence.

Resistance, however, was widespread throughout French Equatorial Africa; villages flared up against demands to yield labour and forest products to the concessionaires and taxation to the French administration. The result was a protracted and brutal war in which the colonial regime sought to bring the whole interior of the colony under its control to facilitate its commercial exploitation. The taking of hostages, including women and children, pillage, arbitrary imprisonment, executions and massacres, the torching of settlements and the sacking of whole communities were commonplace. By the 1930s, when the last areas of resistance were being quashed in what is now the west of the Central African Republic, the French were using planes to spot villagers hiding out in the forests before sending in the army to bring them out.<sup>17</sup>

## Regroupement des Villages

Resettlement of dispersed and shifting African communities into larger, permanent villages on roads and portage trails became a central plank of French administrative policy throughout its colony. One of the main aims of this *regroupement des villages* was to control the local people — to oblige them to render tax and labour and to prevent further rebellions.

*Regroupement* had devastating impacts on the local peoples. One missionary reported to André Gide that the local people:

"prefer anything, even death to portage . . . Dispersion of the tribes has been going on for more than a year. Villages are breaking up, families are scattering, everyone abandons his tribes, village, family and plot to live in the bush like wild animals to escape being recruited. No more cultivation, no more food . . ." <sup>18</sup>

In the early days of colonial rule, it was carried out with little if any consideration of customary land rights, causing conflicts over land between different social groups.<sup>19</sup> Traditional institutions, residence patterns and ties with the land were overturned while overcrowding in the new villages led to declining standards of nutrition and exposed people to epidemics.<sup>20</sup> Sleeping sickness increased throughout the region in the first half of the 20th century, causing a massive decline in population.<sup>21</sup>

Even after Independence in 1960, Gabon and the Congo pursued the policy right into the 1970s. As a regional *préfet* noted in Gabon in 1963:

"We have had enough of these isolated hamlets, which, being so numerous and of eccentric location, lost in the vastness of the Gabonese forest, have never allowed the Gabonese government to have control of their populations or permanent contact with them and have thereby prevented an improvement of their standard of living."<sup>22</sup>

Convinced that "no family head can cut himself off from the duty to modernize", the post-colonial government continued to tear villages away from their crops without any compensation, overturning residence patterns that reflected local ways of life and throwing into disarray, at least temporarily, traditional systems for allocating rights to land. In some respects, *regroupement* under the independent administration was more onerous than in the colonial era: houses in the new settlements had to be laid out in regular rows with defined sizes of houseplots and pathways.<sup>23</sup>

## The Indigenous Elite

The striking continuity between the colonial and independence policies was assured by an élite of French-educated Africans.<sup>24</sup> Under French law, most Africans were subject to the *indigenat*, a set of laws which ascribed an inferior status to local people: "persons under the *indigenat* were subject to penalties and taxation without the legal protection afforded 'citizens'".<sup>25</sup> However, a small number of Frenchified indigenous people were considered as *évolué* and thus accorded "citizen" status, becoming a local "élite attuned to the French presence and subservient to its interests".<sup>26</sup>

Cooptation of the indigenous leadership extended down to the community level through a hierarchy of *chefs du canton* and *chefs du village*, chosen to act as intermediaries between the villagers and the authorities. Dependent on the colonial administration for their positions and often resented and even secretly ridiculed by the villagers themselves, these leaders became ready tools in the colonialists' hands and assisted with the unjust exploitation in the concessions.<sup>27</sup> Favoured ethnic groups emerged, considered to be more "evolved" and less "backward"; groups which had been intermediaries in pre-colonial trade now became an important support base for the administration. This structure and practice still persist; local leaders and

chiefs, and favoured ethnic groups, continue to owe their primary allegiance to the urban élites and to the administration, not to the villagers or to the remoter, more traditional, rural communities.

## Independence: *Plus Ça Change . . .*

After Independence from France in 1960, French Equatorial Africa was divided into the three countries of Gabon, the Congo and the Central African Republic, a division based on the previous colonial administrative divisions.<sup>28</sup> The crucial concern of the departing colonial power was to ensure that the new "independent" governments supported French interests; President de Gaulle warned African states that "France would intervene if it considered its interests in jeopardy."<sup>29</sup> In both Gabon and the Congo, France's principal aim was to guarantee that French logging companies were assured continued access to the forests. Maintaining access to strategic minerals, notably manganese and uranium, the latter being of critical importance to France's civil and military nuclear programme, was also central to French policy. In the Central African Republic, France's main preoccupation was to protect its cotton, coffee and diamond interests.

### • Gabon

French interests were decisive in selecting the future leadership in Gabon after Independence; French logging interests poured funds into the successful election campaign of Leon Mba, an *évolué* from the coastal region. After Mba's accession to power, the press was suppressed, political demonstrations banned, freedom of expression curtailed, other political parties gradually excluded from power and the Constitution changed along French lines to vest power in the Presidency, a post that Mba assumed himself. However, when Mba dissolved the National Assembly in January 1964 to institute one-party rule, an army coup sought to oust him from power and restore parliamentary democracy.<sup>30</sup>

The extent to which Mba's dictatorial regime was synonymous with "French interests" then became blatantly apparent. Within twenty-four hours of the coup, French paratroops flew in to restore Mba to power. After a few days of fighting, the coup was over and the opposition imprisoned, despite widespread protests and riots. The French government was unperturbed by international condemnation of the intervention; the paratroops still remain in the Camp de Gaulle on the outskirts of Gabon's capital, Libreville, to this day, where they share a hilltop with the presidential palace, an unforgettable symbol of the coincidence of interests between the French and the ruling indigenous élite.

With the establishment of a one-party state, abuse of power and office became the norm. Wealth became more concentrated in the hands of the ruling élite, and the network of patronage became further removed from the concerns of ordinary citizens. The Presidency passed smoothly from Mba to Omar Bongo, "the choice of a powerful group of Frenchmen whose influence in Gabon continued after independence."<sup>31</sup> Bongo and his cronies have since amassed substantial fortunes, having "transformed Gabon into their private preserve, handsomely enriching themselves in the process".<sup>32</sup> They have transferred *billions* of French francs annually to Swiss and French banks.<sup>33</sup> Opponents of the regime have been arbitrarily imprisoned and tortured, among other human rights violations.



## • Central African Republic

Post-Independence politics in the Central African Republic were not dissimilar. After the independent-minded first President Barthélemy Boganda died in an aeroplane accident, his successor, David Dacko, received strong French support. But Dacko's repressive policies and lack of effective economic reforms made him unpopular locally; he was widely perceived as a "French puppet caring only about cultivating French interests."<sup>34</sup>

When Jean-Bedel Bokassa replaced Dacko on New Year's Day 1966, it seemed that the country, which had been virtually bankrupted by Dacko's regime, might be given a chance to recover. However, Bokassa's capricious and violent rule became synonymous with the worst excesses of African dictatorship — "the systematic perversion of the state into a predatory instrument of its ruler."<sup>35</sup> Massive corruption was the norm, and Bokassa himself appeared to make no distinction between the revenues to the state treasury and his personal income.

France only withdrew its support for the regime in 1979, when it was revealed that Bokassa visited prisons personally to torture and kill those who had stood up to his whims. As in Gabon, French paratroops were sent in and Dacko restored to power, to be replaced on his death in 1981 by army strongman General Andre Kolingba, the current President.<sup>36</sup>

## • Congo

Independence in the Congo pursued a different course. Initially, the post-Independence regime was modelled in the neo-colonial mould — servile to French political and economic interests. However, "it was swiftly corroded by venality and became an embarrassment not only to its internal supporters but also to its French sponsors."<sup>37</sup> After a street uprising in 1963, the regime was overthrown and a Marxist-Leninist government assumed power. The French did not intervene.

French influence within the Congo remained strong, however, and, despite the Congolese government's rhetoric to the contrary, the role of foreign capital was scarcely diminished. Although the state created marketing monopolies for agriculture and forestry, and nationalized some other sectors — including the petroleum distribution network — the timber concessions, some of the oil palm plantations and many other import-export concerns remained in foreign hands. Foreign oil companies, too, were assured a satisfactory cut.

## Logging Enclave Perpetuated

In all three countries of Equatorial Africa, logging has intensified since Independence. Mechanized logging extended the area of extraction during the 1970s and 1980s, up to the remote forests of the northern Congo and the south of the CAR; the rate of extraction increased some six-fold between 1950 and 1970. The industry has remained an enclave of foreign companies who enjoy the patronage of the governing élites. In the Congo, foreign companies, or joint operations dominated by foreign capital, produce the vast bulk of the timber — nearly 80 per cent of the sawlogs, 90 per cent of the sawn wood and 92 per cent of the plywood. In common with both the Gabon and the CAR, the Congolese government "largely lacks adequate technical and economic competence to control and rationally manage its forests".<sup>38</sup>

During the 1970s, logging in the Congo was widely used as



*Jean-Bedel Bokassa had a close alliance with French President Valéry Giscard d'Estaing who was an enthusiastic big game hunter in the Central African Republic's eastern savannahs. Bokassa rewarded d'Estaing's friendship with handsome gifts of diamonds; d'Estaing in turn supported Bokassa's coronation as "Emperor" of the "Central African Empire" in 1977 and the construction of an "Imperial" avenue leading to Bokassa's palace — the US\$20 million bill was paid for by the French taxpayer.*

a fraudulent mechanism for capital flight, through false declarations of the quantity and type of timber being exported and through transfer pricing. The government attempted to curb this by creating a state monopoly to market timber, but the inefficient and ineffective agency ran at a loss due to collusion between loggers and officials.<sup>39</sup>

A leaked report, prepared for the World Bank, reveals that the logging industry in the Congo is still swindling the government of millions of dollars. Unpaid taxes, stamp duty, transport and stumpage (duty payable on each tree cut) fees are estimated to exceed US\$12 million on declared production alone, while huge quantities of timber are slipping across the border illegally into neighbouring Cameroon and Central African Republic. According to the report, "almost all the companies in the forestry sector are 'outside the law'" and "forestry administration is non-existent". As a result, "the forest is left to the mercy of the loggers who do what they like without being accountable to anyone".

Companies are taking maximum advantage of this lack of supervision. For example, the French company, Forestière Nord Congo, has exclusive rights over 10 years to log some 187,000 hectares in the north of the country. Its contract obliges the company to process 60 per cent of the logs on site and to establish a major sawmill and woodprocessing works constructed out of new, imported materials. In exchange, Forestière Nord Congo has received generous benefits — substantially reduced import duties and a five-year tax holiday on wood production, including company taxes, property tax and stumpage fees. Yet, in complete violation of the agreement, the company bought a non-functioning second-hand mill, has not processed any timber, has exported sawlogs for six years through its tax loophole, and has not paid even the tax it should have rendered. In total, Forestière Nord Congo has cost the Congo some US\$2.9 million in lost revenue.

Elsewhere, the Société Congolais Bois de Ouessou (whose

Provisional Registration

**6th Workshop on  
Quantitative Structure-Activity  
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13-17 September 1994

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**Main Topics**

1. **Parameters and Molecular Descriptors**
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  - accumulation
  - bioconcentrations
  - transformation
  - degradation
4. **QSAR Applications: Ecotoxicity**
  - estimation of effect concentrations
  - mode of action studies
5. **QSAR Applications: Mixture Assessments**
6. **Software and Databases**
7. **Regulatory Perspectives**
8. **Poster Section**
9. **Miscellaneous**

Papers and posters on the above topics are welcome.

The Congress language will be English.

For further information on the workshop, please fill in the provisional Registration Form below and return it **before October 15, 1993** to:

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I wish to receive further information on the exhibition  
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main area of interest (topics 1-9):

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Date: ..... Signature: .....

board includes the Congolese President himself) received foreign "aid" in the late 1980s and early 1990s to install a highly-sophisticated saw mill and veneer producing works. With technical advice from the Finnish company, Jaako Poyry Oy, the World Bank backed the project with some US\$12 million. But costs soon rocketed from an estimated US\$39 million to US\$63 million. Further loans were incurred from several African banks, but the mill was never completed; today only a small sawmill is working. The World Bank report notes "the situation is catastrophic and no further activity within the present arrangement is possible". The company's failure is attributed "quite simply to the overvaluation of the project which has allowed some vultures to enrich themselves immeasurably at the Congo's expense."<sup>40</sup>

In the Central African Republic, where concessions have been granted in 48 per cent of the "exploitable" forests,<sup>41</sup> the accountability of the logging industry is more lax. Illegal cross-border logging into the forests of north Congo was observed by FAO technicians in the mid-1970s, and smuggling of timber down the Oubangi and Congo rivers to the Congolese capital, Brazzaville, on the Zairean border was normal. Today it is common knowledge in Bangui, the capital of the Central African Republic, that nearly all the forest concessions are being illegally logged, the regulations are flouted and much of the timber is clandestinely leaving the country via new road connections with Cameroon. CAR President Kolingba himself is alleged to be closely linked to businessman M. Kamash who owns SCAD, the company which processes timber illegally slipped across the border from north Congo. In common with all the concessionaires in the country, "SCAD carries out no management and employs no foresters — they are just timber merchants who mine the forests".<sup>42</sup>

Since the Gabonese forestry service is funded from the central government budget rather than through stumpage fees and other tariffs on logging itself, there are few incentives for foresters to impose the many rules and regulations to control logging, while the loggers themselves make sure the foresters are provided with suitable incentives not to apply them.

## Rural Stagnation

For the rural communities of Equatorial Africa, the long history of exploitative, extractive and enclavistic development has meant marginalization and poverty. Despite the statistically high per capita incomes of Gabon and the Congo relative to other Sub-Saharan countries, the rural people are poor and getting poorer.

The explicit aim of most government efforts concerning agriculture has been to replace itinerant, family-based, labour-intensive agriculture with fixed, capital-intensive, mechanized agriculture serviced by wage labour. Heavily-subsidized agribusiness schemes to promote large-scale farming — cattle ranches, sugar plantations, battery farms of poultry, rice schemes, rubber and oil palm estates, and banana plantations — have undercut small farmers, destroying the last elements of a cohesive rural society.<sup>43</sup>

A century of neglect and disruption of smallholder agriculture has had inevitable consequences. In the Central African Republic, only one per cent of the country is farmed.<sup>44</sup> In Gabon, agriculture accounts for only eight per cent of the GDP, occupies only 0.5 per cent of the land area and supplies only 10-15



per cent of the country's food needs, the remaining 85 per cent being imported; even traditional peasant crops such as taro, yams, mangoes, avocados and vegetables are imported from neighbouring states, particularly Cameroon.

In the Congo, agriculture yields only 5.9 per cent of GDP. Since Independence, there has been a massive migration to the cities. By 1990, 52 per cent of the total population, and 85 per cent of men aged between 25 and 29 years, lived in two cities alone, Brazzaville and Pointe Noire, although the Congo barely has any industrial base. As in colonial times, the lack of young men in the countryside means that 70 per cent of Congolese farms are managed by women.<sup>45</sup> Education, preferentially given to young men, exacerbates this trend, resulting in the towns being considered the domain of men and the countryside that of women.<sup>46</sup>

The marginalization of smallholder agriculture has also transformed local political institutions. Increasing mobility has weakened community ties and diminished customs which favour the redistribution of wealth and land. Echoing the political shifts which took place during the European slave trade, matrilineal groups have become more patrilineal and marriages with women classified as "slaves" (that is, without lineage and therefore without kin to make demands on agnatic inheritance) have been favoured. These internal trends have been reinforced by imposed national laws which favour cognatic succession,<sup>47</sup> all tendencies which have further weakened the status and security of women.<sup>48</sup>

## Environmental Degradation

The rural exodus and decline of agriculture have had severe environmental consequences. Deforestation around town centres has increased noticeably, as squatters have spilled into nearby forests to cultivate land or to search for firewood. Around Bangui, where not even the salariat (government employees) can afford paraffin for cooking, the demand for 253,000 tonnes of fuelwood each year is causing the forest to retreat to the South and West at a rate of 0.5 to 1 kilometre per year.<sup>49</sup> Meanwhile, the loss of labour in the rural communities has led to wasteful land use and imprudent resource management and is probably the main cause of excessive cutting of gallery forests along the river and stream banks in the Plateaux and Pool regions of Congo.

Hunting of game is illegal in forest areas, but a lucrative — and highly destructive — trade in bushmeat has developed in all three countries. Poor marketing facilities and the difficulties rural producers have in competing with cheaper imported food-stuffs mean that only transportable commodities can sell in urban markets. Bushmeat — from birds, mammals and larger reptiles — fills these criteria perfectly. Whether smoked or fresh, it is a local delicacy with a fetish value as a "noble" food that conveys spiritual powers. Preferred for celebrations and social events, bushmeat is bought by the salariat in particular and often "sells for more in the market than beef, poultry or other domestic meats."<sup>50</sup> Echoing the traditional duties of the hunter, bushmeat is still preferred as a gift to in-laws as a sign of respect.<sup>51</sup>

Bushmeat has therefore become the main source of income for rural communities, particularly those in forest areas.<sup>52</sup> For a rural visitor to the urban centres, a stash of bushmeat is the equivalent of a credit card.<sup>53</sup> The trade not only threatens the

extinction of many large- and medium-sized mammal and bird species long before their habitats are destroyed, but has also led to a decline in rural nutrition because the meat has become less available for local consumption. The long-term implications for the forests' biological diversity is unknown. Many plant species, including some commercial timber species, rely on mammals and birds to distribute pollen and seeds.

A crucial factor promoting the development of the bushmeat trade is transport: the better the roads, the greater the trade — so long as the fauna is not extinguished.<sup>54</sup> As the timber industry relies on the creation of an extensive network of roads for the extraction of logs, it thus plays a major role in the expansion of the bushmeat trade.

Because of the illegal nature of the trade in bushmeat, the volume of the trade is hard to gauge. In Gabon, the World Wildlife Fund estimates conservatively that four tons of meat enter Libreville every month,<sup>55</sup> while a study of the Congolese markets in Pointe Noire suggests that some 260,000 animals are sold there every year.<sup>56</sup>

The bushmeat trade is mediated through patron-client networks — a web of kinship connections, traditional leadership patterns and administrative hierarchy — that link rural communities with the urban centres. The intimate involvement of influential officials in the trade is one of the factors that makes its control so intractable. In the southwest Central African Republic, for example, in wildlife sanctuaries established by the government with international assistance, local officials, including those involved in park management, lend their guns to "pygmy" hunters who shoot game for small payments. The World Conservation Union estimates that, in the north Congo, "out of ten poachers, six are agents of 'Eaux et Forêts' [the national forest service]."<sup>57</sup>

It is this trade in wildlife products — bushmeat and trophies<sup>58</sup> — not the self-provisioning activities of local communities, that is the main cause of faunal decline in Equatorial Africa. The World Wildlife Fund's conclusions after several years' operations in Gabon were that:

"subsistence hunting by small rural communities has a limited impact, [while] professional hunters who provide meat for larger towns can decimate the fauna of a particular area in a short time."<sup>59</sup>

Nonetheless, in many areas, "professional hunters" are also subsistence hunters, the only difference being that the "professional hunter" hunts for the market and may use guns loaned by local chiefs and administrators, who also finance the transport of wildlife products to distant urban centres (and thereby make a 40 per cent profit). "Professional hunters", however, are by no means only villagers. Besides trophy hunters — mainly foreigners who obtain permits to hunt prestige game — urban teams use trucks to enter forests they consider "open access" areas.

## Land Rights

The World Wildlife Fund has concluded that the denial of local peoples' rights to land and control of natural resources is central to environmental degradation in the region:

"Decisions are taken with little or no input from those rural communities most affected by interactions with wildlife. These communities derive little or no benefit from the resources, and hence have little interest in their conservation."<sup>60</sup>

In all three countries of Equatorial Africa, practically all land, outside urban centres, is considered to be owned by the state; customary law, although it continues to be recognized in theory, in practice only secures rights of use, which are readily extinguished in the "public interest".

More restrictive legislation covers forest lands. Forestry laws recognise customary rights, provide legal protection against granting concessions on areas with indigenous customary rights and give priority to local needs. However, as these laws are not applied, logging concessions in practice are granted without reference to local peoples.<sup>61</sup>

Local people want secure rights to their land and feel threatened by the lack of land security. A World Bank forest management project in the CAR, which has encountered resentment from local peoples at further government intervention in their lives, found that local communities "want the government to give them back the power to manage the forest as in traditional times, which would allow them to securely protect the forest".<sup>62</sup> As one community in South CAR has noted:

"In the past the acquisition of lands was handled by the village clans. We had a rational way of using forest lands; the gardens were small and trees were cut down only for cultivation and survival needs. Now lands are taken over anarchically, because they have become state forests. We use chainsaws and we no longer control bush fires, we destroy sacred forests. The logging by Lorimbois also disturbed the environment. We have less game and the streams are drying up."<sup>63</sup>

Most observers agree that customary rights to land must be secured if rural livelihoods are to be stabilized, investments in land encouraged and sustainable forest use promoted. The experience of other areas of Africa, however, reveals that the registration of land titles can inhibit the flexibility of traditional systems, while the process itself of land allocation is open to abuses of power, leading to land concentration.<sup>64</sup> Warning against the introduction of Western systems of land ownership registration, Kevin Cleaver of the World Bank notes:

"Land titling has permitted the political and economic élite, who maintain control of the title distribution mechanism, to grab the land from traditional owners. Land distribution becomes more skewed as a result."<sup>65</sup>

## Future Options

Ways of legally securing communal tenure of land which are acceptable to local communities and which do not favour indigenous élites and outsiders need to be found. As the resident World Wildlife Fund staff in Gabon noted in an internal memo of a proposed World Bank project:

"The most critical issue towards conservation management is decentralization and empowering local communities to manage natural resources . . . The problem is that there is no framework which allows those people most dependent on the forest to participate in the policy-making and planning process: it is imposed from above . . . Inevitably this means that the interaction between resource users and resource managers will be antagonistic . . ."

The main conservation and development initiatives in Equatorial Africa ignore such fundamental issues. The EC, the UN Food and Agriculture Organization and the World Bank are funding largely irrelevant forest inventories which do not take

into account that problems surrounding forest management are political, not technical. Inventories only help timber miners to identify the most lucrative areas of forest to pillage.

If past efforts by environmental organizations, conservationists and development agencies to "save the rainforests" have failed, it is above all because they have not appreciated the political nature of rainforest loss.<sup>66</sup> Technical fixes have been attempted which do nothing to resolve the underlying causes; bandages are applied when surgery is needed.

There is not, as yet, major forest loss in Equatorial Africa; the very low rate of annual deforestation ranges between 0.3-0.5 per cent. But wildlife destruction from overhunting and forest degradation from overlogging — problems which are compounded by mining and a general neglect of rural economies — are seriously undermining local peoples' welfare and contributing to the political conditions for a rate of forest clearance as rapid as in West Africa. Those with authority over the forests have proved that they have no capacity to manage them — or are themselves benefiting from forest destruction; those with an interest in the long-term conservation of the forests have no power.

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*If past efforts to "save the rainforests" have failed, it is above all because the political nature of rainforest loss has not been appreciated.*

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The forests of the region will remain vulnerable until accountable processes of governance emerge. Fortunately the forces pressing for greater democracy in Africa do not depend on external assistance, but on their own courage and coordination. As yet, however, it is not clear in Gabon, the Congo or the Central African Republic that the recent trend towards political liberalization and multi-party elections by itself will counter the clientelism and factionalism that infuses the region's politics. The political parties that have sprung up are, to a large extent, dominated by urban and élite groups; few of the urban and rural poor feel that their interests are well-represented; so far, "multi-party democracy" has turned into a conflict between different élite ethnic factions as to how to carve up the cake among themselves.

Likewise, political liberalization has spawned a large number of non-governmental organizations, notably in the Congo, many of them urban-based and run by members or ex-members of the salariat. Many are also essentially political factions, which have not yet found a convenient niche in the party-political process. A few are well-informed, closely linked to their constituencies and are developing practical ideas to assist these communities. It may be some time, however, before these NGOs develop effective means of being accountable to those in whose name they work.

Ecological balance will not be restored in Equatorial Africa without the resurgence of long-submerged traditions of equality and accountability which will require a long and slow process of rebuilding community institutions and controls. That process could benefit from a favourable legislative environment and emerging local non-governmental organizations — if they have the respect and patience to take their lead from the communities themselves. But it is in the emergence of new community associations, spontaneous women's marketing cooperatives and youth groups, such as the *amis de la nature*, that the best hope lies.



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10. From 1917, the colonial army undertook a brutal campaign in the upper Congo to ensure that the local people worked for the Compagnie Française du Haut Congo. Commenting on the campaign some 75 years later, a study by the World Conservation Union concluded: "The result was catastrophic and the psychological effect on the population was profoundly negative and still persists to this day. Villages emptied, the villagers fled to the hunting and fishing camps out of reach of the "works" and military recruitment. This massive exodus into the bush on the present Gabon-Congo border, between 1917-1920 is called by tradition the 'rubber war'". See Hecketsweiler, P. et al., op. cit. 6, p.70.
11. Quoted in Austen, R. A. and Headrick, R., op. cit. 5, p.35.
12. Pourtier, R., op. cit. 8, pp.175-178.
13. As was noted of a similar process in east Central Africa, the migrant was paid enough for his survival and for taxes, while the migrant's wife and family were expected to sustain themselves by marginal agriculture, maintaining a home to which the migrant returned regularly to beget children and ultimately to retire. The cost of reproducing the labouring population was thereby transferred from the capitalist sector to the village. This effectively meant that villages were subsidizing the establishment of capitalist enterprises throughout the region. See Vail, L., "The Political Economy of East Central Africa" in Birmingham, D. and Martin, P. M. (eds.), op. cit. 5, p.210.
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This article is an edited version of a paper presented to the IWGIA conference on "The Question of Indigenous Peoples in Africa", Copenhagen, 1-3 June, 1993. The paper results from a short visit made to Gabon, the Congo and the Central African Republic between October and December 1992, although most of the information and all statistics are derived from the literature cited. The author would like to express his gratitude to the numerous government and aid agency officials, NGO personnel and community members for their assistance. The full text will be published by the World Rainforest Movement as a book with the same title.

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# Britain's Toxic Legacy

## The Silence over Contaminated Land

by

Alan Watson

*Up to 100,000 sites in Britain may be severely contaminated as a result of past industrial activities — from mining to metal processing and the landfilling of toxic and domestic wastes. Despite a commitment under the 1990 Environmental Protection Act to establish registers of contaminated land, the government bowed to pressure from vested interests and, in March 1993, scrapped plans for them. The public will be denied the right to know what potential hazards lie buried beneath their homes, gardens, schools and workplaces.*

"We all know that the best starting point for assessing contaminated land, and establishing what we need to do about it, is to establish how much there is and where it is," said Junior Environment Minister Tony Baldry in May 1991,<sup>1</sup> adding that "such information is essential when there is concern over the threats to public health and the environment." But on 24 March, 1993, just before regulations requiring local authorities to establish registers of contaminated land were due to be introduced, Environment Minister Michael Howard announced that the requirements would be indefinitely postponed.<sup>2</sup>

### Contaminated Land Registers

Since at least the 1950s, there has been a steady stream of demands for accurate information on the extent of contaminated land in Britain. In a comprehensive 1952 paper on the restoration of derelict and damaged land, J. R. Oxenham drew attention to this absence of essential statistics about the quantities and location of contaminated sites.<sup>3</sup>

Some 15 years later, little had been done to improve the lack of data.<sup>4</sup> While recording the notorious industrial dereliction of the lower Swansea Valley in Wales, K. J. Hilton commented that "unfortunately, information about the acreage, type and location of derelict land and the type and distribution of the industrial waste is not available." Hilton called for "a detailed national survey of all derelict sites in Great Britain", a survey which he considered essential.<sup>5</sup>

But such demands fell on mainly deaf ears. The 1979 Love Canal disaster in the US (when chemicals leaking from an abandoned waste dump forced the resettlement of a whole community) prompted many other industrialized countries to compile inventories of potentially contaminated sites. The Dutch government launched a nationwide survey of known or suspected hazardous waste sites and unearthed 4,000 illegal dumps within six months. The British government, however, remained adamant that such an inventory was not justified by the costs of compilation. Commenting on the lack of information on old sites, a member of a 1981 House of Lords committee on toxic wastes warned: "There is a danger that we may be living in a

minefield for which we have lost the chart."<sup>6</sup>

Four years later, the Royal Commission on Environmental Pollution entered the fray. The Commission recognized the difficulties faced by local authorities and communities in developing land contaminated by industrial and waste disposal activities, but insisted that available technical solutions could "solve" most cases of contamination. The main problem, it argued, was to "ensure a systematic approach to the provision of adequate information and advice for local authorities to identify contaminated sites at an early stage in the planning process". In response, a government working party was set up in December 1987 to consider the feasibility of land registers to record contaminated land and to examine the issues associated with such registers.

The slow government progress on the issue of contaminated land was transformed into an active policy area with the 1989 publication of two reports — one on contaminated land, the other on toxic waste — by a House of Commons Environment Committee. The first report complained that although successive governments had recognized the problem, there was a "lack of policy development on contaminated land"; the second noted that "public concern about waste sites, particularly old contaminated sites, is still primarily a local issue," adding its surprise at finding that the UK public "are remarkably undisturbed by the prospect of living on or close to a polluted site." Citing "the lack of identification of contaminated sites" as the "biggest single problem with the existing system of control", the Committee endorsed the setting up of a comprehensive contaminated land register. The Department of the Environment, however, responded that the cost of setting up registers (estimated at an initial £15 million with £3 million annual running costs — a fraction of the costs involved in cleaning up sites)<sup>7</sup> was still a major hindrance to their compilation.

Nonetheless, in May 1991, the Department of the Environment and the Welsh Office<sup>8</sup> issued detailed draft regulations for setting up registers of contaminated land, stating that "it is better for everyone concerned to know what contamination may be present on a site, and for investigations to be made and if necessary for decontamination to be carried out on a basis of knowledge." After years of procrastination, committees and reports, it seemed that the registers had finally got off the ground.

Alan Watson in an environmental consultant.



## Vested Interests

Such optimism was to reckon, however, without widespread vested interests — from property developers to chartered surveyors, many sectors of industry, development corporations and some local authorities — who began an intensive lobbying campaign to scrap the registers. The Royal Institute of Chartered Surveyors, representing property interests, called for the proposals to be replaced by an innocuous-sounding register of “notifiable sites”. Likewise, landfill operators argued that toxic waste sites — though they should be regarded as “sacrificial sites for some purposes” — should not be classified as “contaminated land”, since legislation (as yet to come into force) would eventually require sites to be restored.<sup>9</sup> Less predictably, the registers have also been opposed by Britain’s leading banks, fearful that they might be held liable for the clean-up costs of land contaminated by borrowers — or that environmental law suits might impair the ability of borrowers to repay loans.

Thus in July 1992, a significantly revised draft of the regulations was issued:<sup>10</sup> the number of contaminative uses was cut down from 50 to eight, reducing the total area of land on the proposed registers to “some 10-15 per cent of the area previously envisaged”. Yet many of the 42 uses dropped from the registers — tanneries, docks, paint manufacturers, munitions manufacture and testing sites, sewage works and electrical equipment manufacturers — have caused serious pollution in the past. The Royal Commission on Environmental Pollution publicly condemned the revised draft, claiming that “it is hard to avoid the conclusion that this marked reduction in the scope of the registers will make protecting the environment and carrying out remedial work even more difficult.”<sup>11</sup> The Association of District Councils, whose members would be responsible for implementing the legislation, described the revised proposals as anomalous and confusing, and noted “some surprising major omissions”, including garages and filling stations which can cause major pollution problems when underground storage tanks leak.

Even in their watered-down form, however, the proposals were vigorously fought by those opposed to the register. Bowing to such pressure, the government backed down, announcing in March this year that it would undertake “a review of the legal powers of regulatory public bodies to control and tackle land pollution,”<sup>12</sup> referring the problem back to yet another committee of “an interdepartmental group of officials” under the Department of the Environment which was given no deadline by which to report. The registers had in effect been scrapped.

Environmental groups claimed that government promises to give the public “access to the information they need in order to act as an environmental watchdog” were exposed as hollow.<sup>13</sup> Friends of the Earth Scotland defiantly declared that it would prepare its own public registers, while Friends of the Earth Cymru (Wales) produced a reasonably comprehensive register in 1992.

## Extent of Contamination

The earliest significant contaminated land in Britain came from metals such as cadmium, lead and zinc leaching from spoil heaps of old mines, some dating back to the Romans 2,000 years ago. Most of the serious and widespread contamination, however, derives from the barely-regulated industrialization of the last 150 years; metal processing and mining are particularly bad offenders but few manufacturing processes are free of blame.

Estimates of how much land in Britain is contaminated differ

widely — reflecting different definitions as to what constitutes “contamination”. Government definitions, for example, have often been phrased to avoid affecting property values — land which has been built on usually being defined so that it is not “contaminated”.<sup>14</sup> Consequently most official surveys play down the problem. The first survey of contaminated land in Wales, for example, listed 749 sites covering 4,079 hectares, a significant underestimation because sites in active use, most landfill sites, and sites covering less than 0.5 hectares were not taken into account, while only a limited number of potentially contaminative land uses were covered.<sup>15</sup> Only the past direct use of land was considered, not land affected by widespread or dispersed contamination. Department of the Environment (DOE) estimates for the UK as a whole

would appear to be even more misleading. Thus while the DOE argues that a maximum of 27,000 hectares is contaminated,<sup>16</sup> the widely-respected consultancy firm, ECOTEC, estimates that there are 75,000-100,000 contaminated sites affecting over 100,000 hectares.<sup>17</sup>

## Risks of Contaminated Land

Contaminated land poses a number of threats to people and the environment. A 1987 government planning circular<sup>18</sup> outlines three main risks:

- to the health and safety of those working on the site or living near it, for example from direct contact with contaminants or consumption of contaminated garden produce. Some contaminants, such as phenols and solvents, can be absorbed through the skin; children, for example, often put soil in their mouths while playing.
- to the safety of a proposed or existing development, for example, from the effect of chemicals on building materials, pipes and cables, from fire and explosions, or from settlement of buildings.
- other detrimental environmental effects, for example, air and water pollution or lack of plant growth, as a result of the disturbance of contaminants. There are many examples where redevelopment of land has increased the pollution of nearby streams and rivers, but even without disturbance, contaminants can seep out.



*Demolition work on a contaminated site in the Midlands. Even minor disturbances to polluted soil can affect the health of those living nearby.*

Robert Brook/The Environmental Picture Library

In some cases, the damage is immediate and obvious. As the material dumped in old landfills breaks down, for example, explosive levels of gases such as methane can build up. In 1986, an explosion at Loscoe in Derbyshire caused by gas moving underground from a domestic waste landfill destroyed a bungalow, severely injuring the occupants. There have been several deaths, particularly in the US, caused by similar explosions. A British government report indicates that at many sites, landfill gas had "migrated 300 to 400 metres, and on some occasions, further."<sup>19</sup> Because even landfill sites that have been licensed to accept only demolition and "inert" waste have generated hazardous concentrations of landfill gases, another government study concluded that "it would be a sensible precaution to assume that every site, whatever its category, has the potential to produce methane... in significant quantities."<sup>20</sup>

There are about 4,000 landfill sites<sup>21</sup> currently operating in Britain, in addition to an estimated 6,000 closed sites.<sup>22</sup> Little official action has been taken to pinpoint high-risk sites, despite a flurry of planning guidelines and technical papers about landfill gas after Loscoe. A survey by the government Inspectorate of Pollution<sup>23</sup> listed over 1,000 gassing sites but failed to identify their location, while Friends of the Earth were told by several waste regulation authorities that "information on closed sites cannot be divulged."<sup>24</sup>

Old and current landfill sites are also major sources of surface and groundwater pollution, a recent government-commissioned study of 100 landfills revealing over half of them to be polluting.<sup>25</sup> In many cases, the effects only become evident over longer periods of time or manifest themselves far from the site of origin. For example, a borehole in the quiet village of Blewbury in Oxfordshire was closed in 1992 when the level of carbon tetrachloride exceeded maximum permitted levels in drinking water. The only potential source for the contamination was the Atomic Energy Authority (AEA) laboratories at Harwell, four kilometres away, where tonnes of chlorinated solvents, typically used for industrial cleaning, have been dumped onto chalk above the regional aquifer.<sup>26</sup> The AEA is now spending over one million pounds on an air stripping plant at Harwell to clean the solvents, chlorobenzenes, pesticides and PCBs from the groundwater which may reduce the very high concentrations within the laboratory boundary, but is unlikely to restore the aquifer and may turn water pollution into air pollution. The total bill over the 10 or more years' operation is likely to run into millions of pounds.<sup>27</sup>

Contaminants from tailings of abandoned lead mines can affect large areas as well as travel long distances. In central Wales, drainage from mine entrances and shafts, and erosion of spoil heaps has led to high concentrations of lead, cadmium and zinc in streams, depleting aquatic life in many rivers. Productivity of at least 1,200 hectares of agricultural land on the river flood plains has been reduced because of the high levels of metals in the soil.<sup>28</sup>

Agricultural practices may also lead to contamination.

Because many industries discharge their wastes through the sewage system, sewage sludge fertilizer may be contaminated with heavy metals, whilst the use of pesticides also poses a major threat. Thus, dichloropropene-dichloropropane (DD), used to kill worms, was believed to degrade rapidly in the environment without major problems, until it was discovered that the use of other pesticides together with DD can inhibit its degradation. In The Netherlands, some 30,000 hectares of agricultural land in Drenthe province are now so polluted with DD that drinking water supplies may have to be treated by air stripping until the year 2050.



*Derelict industrial land in Wolverhampton. At the end of the 1980s, approximately half of all new building in Britain was taking place on redeveloped land, most of which was suspect in terms of contamination.*

Robert Brook/ The Environmental Picture Library

Land may also be contaminated through airborne pollutants. The incineration of toxic wastes — ironically touted as a preferable option to landfill — is a potent source of such contamination. It has recently been shown "beyond reasonable doubt" that the Rechem toxic waste incinerator at Pontypool, Wales, has contaminated land within 500 metres with PCBs and dioxins. The highest dioxin level ever recorded in scientific literature was found on this site.<sup>29</sup>

The ash residues from municipal waste incinerators also cause problems both by leaving toxic heavy metals in a form that readily leaches from landfill sites and as a direct hazard. Residents living close to the Red Moss landfill site in Horwich, Greater Manchester, complained that their health was being affected by wind-blown ash from the site which

accepted 16,000 tonnes of residues from the Bolton municipal waste incinerator each year. A campaign by local residents and Bolton Friends of the Earth resulted in a ban on the deposit of fly ash (the most contaminated part) on the site and pledges to investigate full treatment by solidification of the ash.<sup>30</sup>

## Local Action

With increasing public awareness of environmental pollution, local citizen groups have sprung up around Britain in the last five years, focusing on problems associated with contaminated land. Women from Craigneuk in Scotland formed the Craig Anti-Pollution Group in 1991 with the backing of Friends of the Earth Scotland. They are concerned about their children playing on the open waste tips from the Ravenscraig steelworks, Britain's largest single site of contaminated land which ceased production in summer 1992.

Waste from Ravenscraig, including several million tonnes of coke oven-wastes and pickling acids, was dumped down old mine shafts. Groundwater contaminated with ammonia, cyanide, phenols and oil is now surfacing within the site and in a tributary of the river Clyde which runs within the site boundary. Cleaning up such a heavily contaminated site could cost an estimated £200-£240 million.<sup>31</sup> The Craig Anti-Pollution Group's demands for full details about contamination levels have not been met, and British Steel is threatening to close a nearby steel works if they are forced to clean up Ravenscraig. The residents



## How Safe is Safe?

In 1810, the J. J. White factory bought a 414 acre site of a 17th century steel works near Glasgow and another 12 acres as a waste materials dump, to produce soap and soda, but by 1820, it was producing chrome salts. It went on to become the largest producer of chrome in the world. In 1899, the horrific working and health conditions at the White's factory became a national scandal when Labour leader Keir Hardie published the first of his "White Slave" series of pamphlets on the Rutherglen works, entitled "Chrome, Charity, Crystals and Cant". In many of the workers, the chrome, both liquid and dust, had created holes in their arms and noses. "They told me of John Campbell who had to wear a cage to cover his belly it was so eaten away with chrome poisoning," wrote Hardie.

By the turn of the century, the company had become British Chrome Chemicals Ltd, which started manufacturing chromium oxide in 1919, followed in 1945 by bichromate crystallizing. The waste products changed accordingly from chrome ore dust, to a contaminated liquor, to residue deposits. In the mid-1950s, factory records detail complaints from residents about the chromium dust levels in the street. Other by-products included heavy metals, acids and poisons such as cyanide, arsenic and benzene. After more mergers and amalgamations, the factory finally closed down in 1968 when the production of bichromate was moved to Cumbria.

The 12 acres of land set aside for waste disposal had quickly become inadequate in the 148 years of the factory's working life. Expansive ponds and lagoons formed and regular but indiscriminate dumping took place day and night. In April 1991, chromium waste was discovered on land acquired for the development of a nursing home. A driver, Mr McLeary, employed by the chemical factory to transport the waste to the various dumps, came forward, after local and national publicity, to reveal more

sites — and the names of other drivers. Soon toxic dumps were discovered throughout the built-up areas of south-east Glasgow — Cambuslang, Carmyle, Rutherglen, Toryglen and Eastfield.

An October 1991 public meeting, convened by the district council, revealed that the local people knew far more about the extent of dumped carcinogenic hexavalent chromium waste than the authorities. Rutherglen maternity

hospital has been constructed on top of a toxic waste dump, while an industrial site — with at least four food-related factories — has been built on the site of the former White's chemical works.

Most of the contaminated areas that have been found have been children's play areas and football pitches, which, although fenced off with warning sites, children still play on. Some of the toxic waste seeping through the football park cannot be seen in daylight but glows clearly at night.

Dust and direct human contact with contaminated material seem to be the major immediate threats. Levels of child leukaemia in the area are high, as is the number of children with asthma and people with skin problems.

After several months of official reports, including health reports, members of the public involved in supplying information to the authorities formed the Cambuslang, Carmyle and Rutherglen Against Pollution (CCRAP) group in March 1992 to campaign against and publicize the toxic waste. The group are now opposing plans of Celtic Football Club to build a new stadium on an area believed to have high levels of contamination from the chemical works, and demanding proper remedial action, not just the fencing off of contaminated sites, in addition to surveys to find the full extent of contamination.

*Cambuslang, Carmyle and Rutherglen Against Pollution*



Kevin Dunlop/Friends of the Earth, Scotland

are lobbying hard to ensure that the site is not simply covered over with concrete.

Mary Ferrie of the Craig Anti-Pollution Group expresses the frustrations of many similar groups and concerned individuals when she says, "We're not scare-mongering. We're scared. Why aren't our councillors and MPs shouting the odds about this? We're just housewives, but we have to do it ourselves. We have to say something," a plea that has been echoed around Britain by groups who have found little local or central government interest in land contamination.

### Clean-Up

The most effective way to remove the stigma of contamination would be a credible — but expensive — clean-up operation. The cost of remedial work to prevent landfill gas, for example, can range from £50,000 to £500,000 depending on the site, while remedial work for groundwater pollution may reach

£1 million.<sup>32</sup> The total cost of cleaning-up contaminated land in the UK has been estimated at £10-30 billion.<sup>33</sup> Environmental groups argue that a tax on the more polluting industries, such as landfill sites, steel works, chemical factories and even petrol filling stations, could fund the clean-up and reduce further contamination.

In the meantime, on-site containment — covering contamination with earth or tarmac — and cheap waste disposal in landfills is undermining remedial treatment, and the little remedial work that is carried out is often of a low standard. In a 1988 survey of 29 sites which had been redeveloped, contaminated ground in 22 of them had simply been covered over, while in the remaining seven, contaminants had been removed for disposal off-site, shifting the problem elsewhere. A more detailed assessment of seven of the sites indicated that reclamation on only four of them had prevented hazards to human and animal health, and to the environment. Waste tips, especially those containing drummed or bagged waste, were described as "a contamination time bomb."<sup>34</sup>

## The Future

The 1981 House of Lords Select Committee on Science and Technology called for "a new sense of urgency . . . too many people are comforted by the belief that because nothing has gone wrong so far, nothing is likely to go wrong in the future. Constant vigilance will be needed or that comfortable belief will be rudely shattered." Today, the need for vigilance is greater than ever.

The main hope of an early reprieve for the registers lies with the government's proposed Environment Agency which would replace Her Majesty's Inspectorate of Pollution and the National Rivers Authority, but this is itself facing an uncertain future and has no fixed timetable. Environmental groups and local groups, such as the women of Ravenscraig, are unlikely to let the government drag out the latest review process in the hope that the issue of contaminated land will fade away — nor to let officials at the Department of the Environment in London forget that even the land beneath their desks is potentially contaminated since the building they work from was built on the site of an old gas works.

*Buyer Beware*, a guide to finding out about contaminated land is available for £5.45 from Friends of the Earth, 56-58 Alma Street, Luton Bedfordshire LU1 2YZ, UK.

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# Sapping the Economy

## Structural Adjustment Policies in Costa Rica

by  
**Karen Hansen-Kuhn**

*Fifteen years ago Costa Rica, acknowledged to be the wealthiest and most stable country in Central America, entered a period of economic difficulty. The export-driven structural adjustment programmes introduced by the IMF to stem the decline have only exacerbated it. Costa Rica is now more heavily in debt than ever, and poverty is increasing.*

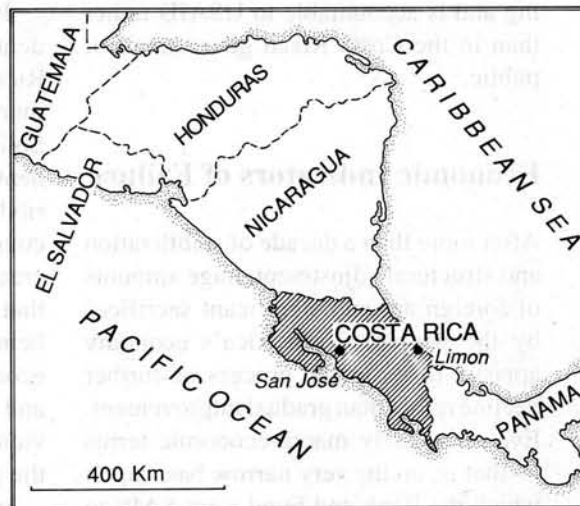
Costa Rica was the first country in Central America to undergo structural adjustment under the guidance of the International Monetary Fund (IMF) and the World Bank. Today, after over a decade of measures designed to lower inflation, cut government deficits and increase exports, it is often cited as an economic success story by the Fund, the Bank and Western donors. As proof, they point to the resumption of economic growth, a decrease in unemployment and a reduction in the national debt-service burden.

Other measures of the country's well-being, however, paint a more troubling picture. Under its adjustment programme, Costa Rica's trade deficit has increased dramatically, and the fiscal deficit and inflation also continue at high levels. The emphasis on export crops has exacerbated rural poverty and environmental degradation.

Proponents of the adjustment model designed and promoted by the World Bank and IMF argue that these negative effects are temporary and that Costa Rica would be in even worse shape if it had not implemented a structural adjustment programme (SAP). Yet, after 12 years, one wonders when these so-called "transitional" costs will end and the benefits for the Costa Rican people begin. If Costa Rica's economy continues in its present direction, the country's independence and democratic tradition will be directly threatened.

### Sliding into Debt

In contrast to the rest of Central America, where civil wars and military coups have dominated the political landscape, Costa Rica has maintained a firm commitment



Alan H. Graham

to electoral democracy since 1949. The rights of free speech and association, guaranteed by the constitution, have allowed labour unions, agricultural cooperatives and other representative non-governmental organizations (NGOs) to flourish. The country's post-World War II development model — which emphasized food self-sufficiency, agricultural exports and import-substitution industries — led to a steady rise in the Gross Domestic Product (GDP), allowing the government to invest in its people by providing free education and health care. In 1980, Costa Rica had the lowest infant-mortality rate and highest average life expectancy (72.6 years) in all of Central America.

By the late 1970s, however, cracks were beginning to appear in the country's economic structure. A sharp decline in the world price of coffee, Costa Rica's main export crop, lowered government revenues. At the same time, imports were rising, partly through increased demand for foreign consumer goods from the increasingly prosperous middle and upper classes. In addition, the light assembly plants that came to dominate the manufacturing sector were heavily import-

dependent: by the early 1970s, every US\$100 of manufactured goods required \$80 of imported machinery and materials.<sup>1</sup> These factors, combined with high levels of public spending on social services, led to a large and growing balance-of-payments deficit.

The government's response was to try to borrow its way out of its difficulties. Between 1975 and 1982, it borrowed some \$2.7 billion, mostly from foreign commercial banks. As a result, Costa Rica came to have one of the world's highest levels of debt per capita, with debt-service payments amounting to 60 per cent of export earnings by the early 1980s. By 1981 the government had suspended debt payments to virtually all of its creditors and was applying to the World Bank and IMF for assistance.

### Enter the IMF and the World Bank

Costa Rica's relationship with the IMF and World Bank has not been a particularly smooth one: the first two loan agreements with the IMF in 1980 and 1981 were suspended because of government non-compliance with IMF terms.<sup>2</sup> But in the long run, the government has had little choice but to conform to the IMF conditions. Throughout 1982, the country's economic situation continued to deteriorate, with inflation rising to 109 per cent and real GDP falling by seven per cent, and in December President Luis Monge signed a new loan agreement with

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the IMF. In 1985, the government received its first Structural Adjustment Loan (SAL I) from the World Bank to support longer-term changes in the economy.

A second adjustment loan (SAL II) of US\$100 million was approved in November 1989 along with a matching loan from the government of Japan. However, the Bank suspended disbursements in early 1990 when both the inflation rate and the government budget deficit exceeded the specified targets. The signing of a new agreement with the IMF in April 1991 freed further SAL disbursements while committing the government to reduce drastically both inflation and the budget deficit. It also required the government to increase the sales tax temporarily by a staggering 30 per cent, which has hurt the poor disproportionately.

The ink was not yet dry on this agreement when an earthquake hit the country, killing 62 people and causing massive damage to the port of Limón. Although there was an urgent need to provide emergency relief and to repair damaged roads, bridges and port facilities, the IMF insisted that the government reduce overall spending. Massive cuts soon followed in the housing, higher education and transportation sectors.<sup>3</sup>

## USAID Joins In

The Costa Rican structural adjustment programme has been supplemented with funding from the United States aid agency, USAID. The bulk of this funding supported the development of non-traditional agricultural exports, subsidized imports of basic grains under the Food-for-Peace programme, and the privatization of state-owned marketing boards.

The threat of withdrawal of USAID money has been used to enforce compliance with Bank and IMF conditions. The development-assistance agreement signed in June 1991 between Costa Rica and USAID, for example, specified that the government must begin negotiations with the Bank on a new structural adjustment loan, completely privatize the Costa Rican Development Corporation (CODESA), and prohibit the Central Bank from financing any government operations except through Treasury bonds.<sup>4</sup>

Between 1948 and 1980, US economic assistance to Costa Rica totalled only \$282 million. This figure rocketed to \$1.33 billion over the next decade, with annual expenditures jumping over 16-fold as the

United States used Costa Rican territory to supply the Nicaraguan Contra rebels. Massive amounts of US economic assistance to Costa Rica have led to the creation of what many observers have called a "parallel state". While the budgets of government agencies have been cut under the adjustment programme, USAID has funded private agencies operating outside of state control to perform some of the same functions. For example, CINDE, the Costa Rican Coalition for Development Initiatives, founded and funded by USAID, has the same role as the government's CENPRO, the Centre for Promotion of Exports and Investments, except that CINDE has much greater funding and is accountable to USAID rather than to the Costa Rican government or public.<sup>5</sup>

## Economic Indicators of Failure

After more than a decade of stabilization and structural adjustment, huge amounts of foreign aid and significant sacrifices by the people, Costa Rica's economy appears to be in the process of further decline rather than gradual improvement. Even in strictly macro-economic terms — that is, on the very narrow basis upon which the Bank and Fund want SAPs to be judged — the economic programme has failed. While GDP growth resumed after a sharp fall during the economic crisis of 1981-82, GDP per capita still had not reached pre-crisis levels in 1990. Furthermore, inflation has not been brought under control over the past few years. While it fell in 1992 to approximately 17 per cent, in 1991 it was 25 per cent, the highest level since 1982.

Other signs of economic instability abound. In spite of the massive amounts of money and technical assistance that have been poured into export-promotion programmes, the country's trade deficit increased over 400 per cent in six years, from \$134.9 million in 1984 to \$568.7 million in 1990. Exports, especially of non-traditional products, have increased considerably, but imports have grown even more rapidly as trade barriers have been lowered.

Despite claims that adjustment programmes help countries ease their external debt, Costa Rica's actually increased during the adjustment period, from \$2.7 billion in 1980 to \$3.8 billion in 1990. This rise occurred in spite of the country's participation in the US "Brady Plan"

debt-relief scheme under which Costa Rica was able to "buy back" much of its outstanding commercial debt at a discount. Although this lowered the country's nominal amount of outstanding debt, in practice it has done little more than legitimize the actual level of debt payments that Costa Rica had been making for the previous four years — approximately one-third of its obligations: little in the way of new resources has been freed up.<sup>6</sup> Also, the debt reduction has been conditional upon continued implementation of adjustment measures and adherence to an economic model that increases the country's dependence on foreign markets, imports and loans.

Just as disturbing, particularly for the democratic future of the country, Costa Rica's adjustment programme has led to increasing economic polarization. Ottón Solís, Minister of Planning under President Oscar Arias, points out that the period since 1985 is the first time in the country's history that wages have decreased while GDP has grown, indicating that the benefits of that growth are not being distributed evenly. The neoliberal economic model promoted by the Bank and the IMF, Solís believes, has created a vicious circle that will continue to widen the gap between rich and poor.

It has also benefited narrow commercial interests at the expense of much needed government revenues. Under the SAP, import duties have been reduced and tax concessions and other subsidies granted to export companies, measures that have drained resources from the government while rapidly increasing imports. As a result, inflation and the trade and fiscal deficits have grown to unacceptable levels, leading to further currency devaluations and, since domestic substitutes for imports have not been stimulated, yet more inflation. Solís claims that SAPs, rather than increasing efficiency and productivity, only serve to decrease wages, employment and long-term economic growth.<sup>7</sup>

While the government managed to lower inflation and to cut the fiscal deficit in 1992 to meet the IMF requirements, it did so mainly through desperate stop-gap measures that are clearly unsustainable. Public expenditure was reduced by decreasing debt payments by state-owned enterprises and confiscating those enterprises' profits, as well as by delaying public-sector investment projects. In addition, revenue from import duties, which constitute half of the government's tax



income, increased with a surge in imports resulting from the implementation of trade-liberalization measures. According to local economist Denis Melandez, the reduction in the fiscal deficit represents a one-time "publicity boom" rather than any true improvement in the local economy.<sup>8</sup>

## Fat Cats

Costa Rica's dependence on unstable agricultural export markets was a major factor in the country's economic decline of the 1970s and early 1980s. Nevertheless, under SAL II, the government introduced an agricultural policy, known as the "Agriculture of Change", which was designed to reorient agricultural production even more towards exports. Credit and guaranteed prices for domestic grain and bean production for the local market were slashed and restrictions of grain imports, which compete with this production, were lifted.<sup>9</sup> Meanwhile the colón was devalued in order to make the country's agricultural exports cheaper and more competitive in world markets.

Incentives for exporters under the "Agriculture of Change" have included the removal of export taxes, the dropping of import duties on farm inputs, exemption from income taxes on production for export, preferential interest rates, special access to foreign exchange, and export-incentive bonds called *Certificados de Abono Tributario* (CAT). These bonds, which are available to exporters of agricultural and industrial products, are worth up to 12 per cent of the value of the non-traditional exports sold and can be used by recipients to reduce their income taxes or they can be sold for cash. CATs benefit the final exporter, not the producer.

Jorge Hernandez of UPANacional, Costa Rica's largest farmers' union, estimates that between 80 and 90 per cent of the benefits generated by the CATs have been taken by five transnational corporations, with nearly a quarter of total CAT benefits going to a local subsidiary of Del Monte.<sup>10</sup> This subsidy to corporate exporters has increased the country's budget deficit. Over a period of five years, the value of the CATs increased some 1,900 per cent, so that by 1990 they constituted eight per cent of total government expenditures. In 1991 they were equivalent to 43 per cent of the fiscal deficit at a time when expenditures for education, health services and support of food production were being cut.<sup>11</sup>

## Impact on Small Producers

Few small producers are willing or even able to participate in the non-traditional export production which is much riskier than the customary basic-grain farming. These crops require new techniques and information about product-quality requirements, pricing and markets. The government has provided very little technical assistance in these areas, so many farmers have chosen not to take the risk of producing new crops. They continue to grow products more familiar to them, even though price supports, credit and

often unable to obtain loans.<sup>13</sup> Not surprisingly, foreign investors dominate both the production and export of non-traditional crops. Forty per cent of macadamia nut production, 52 per cent of cut-flower production and 46 per cent of pineapple cultivation is controlled by foreigners, who also take the lion's share of the incentives and benefits under the "Agriculture of Change".<sup>14</sup>

Some small producers have found a way to participate in the production of these crops, but often at a loss to their independence. They enter into long-term contracts with the larger corporate



*Cargo culture. Transcontinental containers at Limon, Costa Rica's main port, typify the country's export-driven economy.*

protection from foreign imports for these goods have been slashed.

The amount of money needed to grow export crops also puts this option out of the reach of most Costa Rican farmers. According to Central Bank figures, the start-up costs for one hectare of the non-traditional crops that qualify for special export incentives range from 170,000 to 85 million colones, despite the fact that 97 per cent of the country's farmers earn less than 180,000 colones a year. Borrowers also are often required to guarantee 80 per cent of the value of the loan, a condition that most small farmers cannot meet.<sup>12</sup> Furthermore, these crops usually need heavy applications of imported fertilizers and pesticides and tend to require more mechanized machinery. With agricultural credit for small farmers having been cut in half between 1984 and 1988 as part of the SAP, even those farmers prepared to pay interest rates averaging 23 per cent to make these purchases are

agribusinesses, such as Pindeco (a subsidiary of Dole), Tico Fruit and Melones del Pacifico, which typically provide credit and technical assistance to the producer. In return, the farmer agrees to produce only the specified commodity, to sell it only to the contracting firm and not to sell, rent or mortgage his or her land for the duration of the contract. Although farmers retain legal title to their land, they effectively lose control over its use for periods ranging up to 17 years.<sup>15</sup>

This phenomenon indicates an even more fundamental and troubling problem emerging in Costa Rica. Reflecting the concerns of many others, both in and outside the country, farm leader Carlos Campos claims that there has been a "frightening concentration of land ownership" since the new policies went into effect in 1986 as more and more farmers are forced to sell their land and become workers on corporate plantations. The World Bank itself acknowledged this

possibility in its 1988 Country Economic Memorandum on Costa Rica, stating that "... small holders unable to move into the new [non-traditional] activities might have to sell their land and become landless workers."<sup>16</sup>

While crop production has been diversified under the "Agriculture of Change", markets have not. Earnings from non-traditional agricultural exports increased from \$51 million in 1985 to \$153 million in 1990, but most of these goods went to the United States.<sup>17</sup> In 1987, Costa Rican cut-flower producers found themselves barred from the US market when US producers objected to the increased imports and pressured the Congress for import restrictions. While the market was eventually reopened, the incident highlighted the vulnerability of an export strategy which relies on a limited number of outlets.

Since the early 1980s, Costa Rica has gone from near self-sufficiency in food production to importing over half of all cereals consumed. In 1974-75, the US sent 1,000 tons of food aid to Costa Rica; in 1987-1988 that figure had leapt to 235,000 tons.<sup>18</sup> For Costa Rica's small producers, this has been a disaster. Farmers' organizations have objected to the emphasis on production for export, and the country's deepening dependence on imported food. In July 1990, leaders of 32 farmers' organizations sent a letter to US Congressman Dante Fascell, declaring that the structural adjustment measures imposed by the World Bank and the food aid administered by USAID in Costa Rica have led to "the reduction of our earnings, hunger and suffering for our families, and the loss of our nation's food security."<sup>19</sup>

## The Environmental Cost

Production of the new export crops in Costa Rica typically involves massive use of agrochemicals because many of the non-traditional crops are not native to the country and are highly susceptible to pests and diseases. In a study, by the Costa Rican NGO, CECADE, of melon producers using such agrochemicals as Tamaron, Paraquat and Lannate (Metomil), over 70 per cent of them reported witnessing domestic or wild animals die after spraying, and 58 per cent knew of water supplies poisoned by the agrochemicals. Three-quarters of the farmers reported having health problems that they attributed to the insecticides and fungicides. Symptoms included constant head-

aches, nausea, fainting and vomiting.<sup>20</sup>

At least 1,500 farmworkers now seek medical attention for pesticide poisoning each year, but government officials say that even that number seriously underestimates actual cases of poisoning. Thousands of banana-plantation workers, exposed to 1,2-dibromo-3-chloro propane (DBCP) and other chemicals that have been banned in industrial countries for years, report continuing health problems, including sterility.<sup>21</sup>

The push to export has also affected Costa Rica's forests. Illegal logging has been reported on Indian reservations, as well as in areas bordering national parks. In May 1985, 45 Boruca Indians were arrested for blocking roads used by logging trucks that were illegally removing trees cut on their reservation. While the Borucas were eventually granted ownership of those logs, they still have little recourse to stop the logging process. According to Luis Tenorio, a geographer at the National Commission on Indigenous Affairs, forests on the reservations continue to be cut in the face of the weak government enforcement of conservation laws.<sup>22</sup>

Today, Costa Rica has one of the world's highest rates of deforestation. According to recent estimates by the World Bank, all unprotected forests in Costa Rica could disappear by the mid-1990s. Increasingly, the national parks are becoming small islands of conservation in a sea of deforestation and environmental degradation. With increasing poverty and a growing number of rural workers driven off their land by the new agricultural policies, these parks have become the destination of an increasing number of landless people in the country.

## Maquiladoras and Free Trade Zones

The expansion of non-traditional industrial exports has been another principal feature of Costa Rica's adjustment programme. The country's "industrial reconversion" programme began as part of the government's 1986-1990 National Development Plan and was reinforced in the SAL II agreement in 1989.<sup>23</sup> Like the "Agriculture of Change", the industrial reconversion policy directs production away from consumer goods for domestic consumption and towards increasing exports.

For example, export-assembly plants, known as *maquiladoras*, receive the same

incentives as non-traditional agricultural production: CATs, preferential interest rates and exemption from income taxes. Over 70 per cent of these factories produce textiles, although investment has been growing in the electronic-goods sector. Under the incentive programmes, the number of *maquiladoras* has increased dramatically. Between 1972 and 1980, a total of 32 were established, while 104 were set up between 1985 and 1990. About two-thirds of the investment in *maquiladoras* is domestic rather than foreign, but those firms and the jobs they generate tend to be much more unstable than the better capitalized foreign-owned plants. The recent closures of many of the nationally owned factories has led to the growth of piecework, in which people assemble goods in their own homes, thus lowering overhead costs to their employers.<sup>24</sup>

Free-trade zones (FTZs) have also been part of the industrial-reconversion plan supported by the World Bank under SAL II. Plants operating in these zones that export over half of their production are exempt from taxation for ten years and benefit from the priority given by government to the construction of the infrastructure that they require. While these zones have been advanced as a means of expanding employment in the poorest regions of the country, so far nearly all of them have been located in the San José metropolitan area.

Both the *maquiladoras* and the FTZs tend to employ many more women than men — over 80 per cent of the production workers in *maquiladora* plants are female. Surveys have shown that many plant managers prefer to hire women because of their familiarity with textile production and their willingness to accept lower salaries. Production workers in the free-trade zones receive an average of between \$80 and \$120 per month, considerably lower than the national monthly minimum wage of \$150. In FTZ firms, employers tend to employ women in unskilled jobs while hiring men for supervisory and high-skill positions paying two-to-four times the unskilled wage.<sup>25</sup>

While labour-rights abuses in the Costa Rican FTZs and *maquiladoras* have not been as harsh as in many other Central American countries, workers' ability to form independent unions to represent their interests has been undermined by the development of *solidarismo*. Many FTZ and *maquiladora* firms have established "Solidarist" associations for their employees. These associations are funded



by monthly contributions from members and employers. The employers charge their contributions to the solidarist funds against monies which they are required to set aside for employee termination benefits. The associations usually have savings-and-loan plans and sell consumer goods, in addition to offering health services and access to housing, recreation, investment, small-enterprise-creation and pensions programmes.<sup>26</sup>

In 1991, the Freedom of Association Committee of the International Labour Organization (ILO) investigated claims by Costa Rican unions that the solidarist associations were being used to undermine trade unions. The committee heard numerous reports of employers informing new employees that they were expected to join the solidarist associations and warning them not to take part in union activities. Companies had illegally made direct settlements with such groups of workers to undermine unions and collective-bargaining agreements.<sup>27</sup>

Workers are left in a bind. Many need the extra incentives provided by the solidarist associations, but membership in them effectively blocks efforts to resolve collective problems, such as low wages and sexual harassment. Without independent unions to help balance employees' needs against those of plant owners, it seems highly unlikely that significantly improved labour standards and wages will be seen in the *maquiladoras* or FTZs.

## Who Foots the Bill?

Structural adjustment has affected poor and middle-class people disproportionately. Until 1980, Costa Rica had a long history of constantly rising real wages, a factor which helped produce the nation's relatively high standard of living. Under the adjustment programmes of the 1980s, however, wages actually declined, with average real wages 16.9 per cent lower in 1991 than at the beginning of the previous decade.<sup>28</sup> A leaked government report indicates that the number of Costa Ricans who lack the minimum income needed to meet their basic needs increased from 415,853 in 1987 to 599,528 in 1991 — from 21 to 28 per cent of the population. The report concludes that the groups benefiting most from the adjustment measures have been exporters of non-traditional products, importers and those linked to the financial-services sector.<sup>29</sup>

As wages declined and poverty spread during the 1980s, the Costa Rican gov-



Mauricio Ramirez/Select

*Very selective logging in Costa Rica. According to a 1991 World Resources Institute study, natural resource depreciation of forests, soils, and fisheries in Costa Rica increased from 5.3 per cent of GDP in 1970, to 10.2 per cent in 1988. In 1991, the Telefono Verde, a public hotline through which callers could report environmental crimes, elicited 523 calls in its first three months, including 128 related to illegal logging. Unfortunately, the Ministry of Natural Resources only has sufficient personnel and funds to deal with a fraction of these complaints.*

ernment also cut social service expenditures in line with World Bank and IMF requirements, to reduce the current account deficit. A 1992 Bank report on adjustment lending shows government budgets for health, nutrition and sanitation programmes declining 35 per cent in real terms between 1979 and 1988, while real expenditures per capita fell by 45 per cent.<sup>30</sup> For the first time in decades, infant mortality rates have begun to rise, and the incidence of infectious diseases, such as malaria, tuberculosis and measles, has increased dramatically; reported cases of malaria, for example, rose from 168 in 1981 to 3,247 in 1991.<sup>31</sup> Referring to the public-health system's inability to deal with these problems, Jose Sanchez of the Ministry of Health comments, "Those are the great achievements of SAL I and II. Thanks a lot."<sup>32</sup>

## Popular Resistance

Popular opposition to adjustment policies has grown throughout the country. As rural poverty has increased, so have squatter invasions of empty lands and demonstrations against declining services and access to credit. An attack by private security forces on a group of 180 landless families squatting on a large farm in Chilamate de Sarapique in May 1991

raised serious questions about the alarming growth in the number of private paramilitary groups.<sup>33</sup> It also raised concerns about the danger that economic decline and polarization poses for social harmony, the protection of basic rights and the nation's democratic system.

At the same time, Costa Rican farmers have vigorously protested against policies designed to shift production from basic food grains to non-traditional agricultural exports. In 1987, for example, over 10,000 farmers affiliated with UPANacional, the national farmers' union, marched in the capital, San José, to protest against the agricultural policies promoted under structural adjustment. In June 1988, farmers' organizations affiliated with UPAGRA, a regional farmers' union, held demonstrations across the country, occupying government buildings and blocking highways.

In San José, plans to cut government services and public-sector employment have elicited a strong reaction from unions. Over 70,000 workers participated in an October 1990 national strike led by the *Consejo Permanente de Trabajadores* (CPT), a federation of public sector workers, to protest the austerity measures. The CPT has formulated an alternative national plan, the *Programa Economico Costarricense I*, which recommends increasing the fairness of taxation; decen-

tralizing government operations; reducing the public bureaucracy; focusing spending on the poorest regions and developing ecologically sustainable policies.

Work stoppages and demonstrations have occurred periodically since 1990, with workers demanding a halt to layoffs and salary increases to offset the 25 per cent decline in the purchasing power of their wages over the last four years. Throughout the country, academic groups, popular movements and non-governmental organizations are demanding a process of national *concertación*, or consensus building, that would include all social sectors, rather than just the powerful interest groups that have benefited most from the adjustment programme to date.<sup>34</sup>

## The "Best Case Scenario"

In many ways, Costa Rica's political stability and relatively high standard of living, together with the large inflow of foreign aid, should have made the country a "best case scenario" for the application of adjustment policies. But SAPs have not lifted Costa Rica out of economic crisis and toward stable, equitable development. Instead, they have led the country into a series of new economic crises marked by growing disparities in wealth and income and extensive environmental damage.

Despite the accumulated evidence of a failed economic policy in Costa Rica, the current Calderon Administration has intensified the implementation of the country's adjustment programme. SAL III, scheduled to begin in mid-1993, will be by far the largest and most ambitious adjustment programme to date in Costa Rica. It is the first adjustment loan spe-

cifically oriented to reducing the size and role of the state through cuts in public employment and spending and to decreasing the functions of the national development banks.

Rather than learning from Costa Rica's experience, the promoters and financiers of the programme — the World Bank, the IMF and USAID — continue to insist on government compliance with SAPs across Central America. In a region emerging from years of civil war, with fragile democracies and pervasive poverty, this is a foolish and short-sighted policy.

This article is based on a recently released booklet, *Structural Adjustment in Central America: The Case of Costa Rica*, by Karen Hansen-Kuhn, published by The Development GAP, 927 15th Street, NW., 4th Floor, Washington DC, 20005, USA.

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# The Eugenics of Normalcy

## The Politics of Gene Research

by

Ruth Hubbard and Elijah Wald

with Nicholas Hildyard

*Molecular biologists now claim that they can link specific DNA sequences to specific diseases, forms of human behaviour and social conditions — from diabetes and cystic fibrosis to homosexuality, alcoholism, intelligence and even homelessness. Further, by mapping “the human genome”, they hope to reveal “what it is to be human”. Although based on flawed science, such claims are being used to divert attention from environmental factors in disease and to legitimize new forms of intervention in social life. The myth of the “all powerful gene” threatens to impose a new eugenics — with “normality” defined by arbitrary models of a standard human.*

Few people can have missed the growing flood of gene stories in the popular press. Within the last few years, genes have been announced “for” manic depression, schizophrenia, alcoholism and smoking-related lung cancer. These supposed identifications are invariably obtained with small samples of people, and much publicity accompanies every such “discovery”. Like mirages, many of these genes disappear when one tries to look at them closely — the claims about manic depression and schizophrenia genes were withdrawn soon after their announcement and the gene for alcoholism has met a similar fate. However, there are so many gene stories that people are left with the impression that our genes control everything.

Indeed, a new industry is rapidly being built on hopes of “better living through genetics”. Evoking images of the quest for the Holy Grail, molecular biologists — the scientists who study the structure and function of genes and DNA (see Box, p.186) — have embarked on a project to map and sequence “the human genome”. With a budget of \$3 billion over the next fifteen years, the Human Genome Project has been described as “the most astonishing adventure of our time” and “today’s most important scientific undertaking”. Supporters claim that the project prom-

ises to reveal “what it is to be human” and to “illuminate the determinants of human disease” — even those diseases “that are at the root of many current societal problems”.<sup>1</sup>

### The Hypothetical Human

This is reductionism at its most extreme: not only are such claims based on a flawed view of genes being “all powerful” in determining human disease and behaviour but, far from revealing “what it is to be human”, the genome project and similar programmes will reduce the essence of humanity to a *hypothetical* sequence of sub-microscopic pieces of DNA molecules. As Richard Lewontin, Professor of Zoology at Harvard University, comments:

“While the talk is of sequencing *the* human genome, every human differs from every other. The DNA I got from my mother differs by about one tenth of one per cent from the DNA I got from my father, and I differ by about that much from any other human being. The final catalogue of “the” human DNA sequence will be a mosaic of some hypothetical average person corresponding to no one.”<sup>2</sup>

By magnifying the mythic importance our culture assigns to heredity — and by increasingly appropriating the right to define what is “normal” in human biology and behaviour — molecular biologists threaten to impose a new eugenics upon society.

### Heredity and Environment

People have long argued about what is most significant: heredity or environment. Belief in the power of heredity was strong at the beginning of this century. Genetics was becoming a discipline in its own right, and scientists hoped it would solve a wide range of problems. However, hereditarian ideas went underground after the Nazis’ racist, eugenic policies became widely known: such policies stand as a horrific warning of the dangers of assigning too much power to biological inheritance.

Since the early 1970s, the pendulum has been swinging back, and scientists are again emphasizing the importance of heredity in shaping our character and actions. This shift is due in part to a conservative backlash against the gains of the civil rights and women’s movements. These and similar movements have emphasized the importance of our environment in shaping who we are, insisting (in the US) that women, African Americans and other kinds of people have an inferior status in American society because of prejudices against them, not because of any natural inferiority. Conservatives are quick to hail scientific discoveries that seem to show innate differences which they can use to explain the current social order.

By exaggerating the importance of genes, hereditarians try to find simple answers to complicated questions. But the interactions and transformations that go on inside us, and between us and our

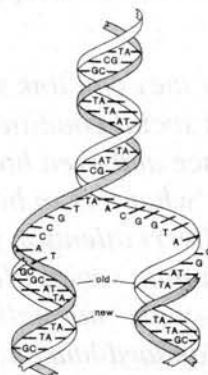
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# What are Genes?

Biologists agree that genes are functional segments of deoxyribonucleic acid (DNA), the molecule in chromosomes that specifies the composition of the various proteins that occur in organisms. Specific genes — or more accurately, specific functional segments of DNA — may affect whether and at what rate a particular protein, as well as the proteins specified by other nearby genes, are synthesized.

DNA is composed of two ribbons consisting of alternating sugar and phosphate molecules wound into a double helix. The ribbons are connected by rungs which are formed by two *bases*, one attached to each ribbon. There are four kinds of bases

in DNA: adenine (A), thymine (T), cytosine (C) and guanine (G). On any one strand of the double helix, the four kinds of bases can occur in any sequence, but their shapes are such that, in order to fit together into rungs, every A on one strand must lie opposite a T on the other strand, and every C must lie opposite a G. So, if a segment of DNA on one strand has the sequence of



units CAAATTGC, the corresponding sequence on its partner strand would be GTTTAACG. The ostensible purpose of the Human Genome Project is to map and determine the base sequences of all the functional DNA sequences within "the" human genome.

When speaking about how DNA functions, molecular biologists, as well as the media, tend to say it "controls", "programmes" or "determines" traits. These verbs are all inappropriate because they assign far too active a role to DNA, conveying the impression that segments of DNA are absolute predictors. Rather, although its contribution is important, a functional DNA sequence is simply one of the components that participate in engendering a particular trait. It is easy shorthand to call such sequences "genes".

environment, are too complex to be forced into simplistic patterns. Our environment is full of other living organisms, from the bacteria that colonize our intestines and supply us with essential vitamins and other foodstuffs, to the human beings and other animals with whom we live. Looking at all our genes, or even at all the genes of all these creatures, would still not tell us very much about "human nature" or our interrelationships in societies and in nature.

## Fallacies of Genetic Predictions

The assumption that there is a relatively straightforward relationship between genes and traits is critical to the new orthodoxy, providing the theoretical underpinning for programmes such as the Human Genome Project and for the increasing use of techniques such as genetic screening. It is, however, highly misleading.

Firstly, inherited conditions — one's eye colour, for example — involve an extremely complex interplay of many factors and processes, and cannot be reduced to single genes acting alone. As Abby Lippman, Professor of Epidemiology at McGill University, and Philip L. Bereano, a political scientist, comment: "Most of us learned the significance of genetic information through high-school lessons about Mendel's experiments with tall and short pea plants. But we may have forgotten that a pea plant with tall genes that

receives inadequate sunlight, water or nutrients will be short."<sup>3</sup>

Secondly, as Richard Lewontin points out, the problem of establishing direct causality between specific genes and specific traits is complicated still further by the fact that "messages" carried by specific DNA sequences vary in different contexts, just as words have different meanings in different contexts. Lewontin uses an analogy with the many meanings of the word "do". Thus:

"No word in English has more powerful implications of action than 'do'. 'Do it now!' Yet in most of its contexts, 'do' as in 'I do not know' is periphrastic, and has no meaning at all. While the periphrastic 'do' has no meaning, it undoubtedly has a linguistic function as a place holder and spacing element in the arrangement of a sentence... So elements in the genetic message may have meaning, or they may be periphrastic. The [DNA] sequence 'GTAAGT' is sometimes read by the cell as an instruction to insert the amino acids valine and serine in a protein, but sometimes it signals a place where the cell machinery is to cut up and edit the message; and sometimes it may be only a spacer... that keeps other parts of the message at an appropriate distance from each other. Unfortunately, we do not know how the cell decides among the possible interpretations."<sup>4</sup>

Thirdly, even genes that are implicated in conditions whose inheritance follows a

regular and predictable pattern are proving to be far from simple to define and localize. Identification of the "cystic fibrosis gene" and its localization on chromosome 7 has turned up many different base changes (*see Box*) that are associated with this condition in different individuals, rather than a single base change or mutation, as expected. In fact, cystic fibrosis probably is not a single entity, but a group of related conditions with somewhat different manifestations that result from different mutations in the DNA sequence.<sup>5</sup> The gene associated with Huntington disease on chromosome 4 has turned out to involve an altogether unanticipated type of mutation, in which short base sequences, such as Lewontin refers to, are repeated many times. In the case of Huntington disease, the repeats involve the insertion of variable numbers of "CAG" units within the gene associated with the synthesis of an as yet unidentified protein with unknown functions. Currently, increasing numbers of mutations are being attributed to such expanded strings of repeats. How many of the interpretations will survive the test of further experiments remains to be seen.

## Genetic Red Herrings

Despite the complexities revealed by current research, molecular biologists have been increasingly successful in persuading society at large that ill health should, and can, be viewed primarily as a genetic



problem. One result is that, by focusing attention on what is happening inside us, attention has been distracted from environmental and social factors that need to be addressed.

Consider the search for a "gene for diabetes". Diabetes is a disturbance of carbohydrate metabolism, characterized by unusually high concentrations of the sugar glucose in the blood. Medical scientists recognize two forms of diabetes, Type 1 and Type 2. Type 1 diabetes usually appears during adolescence, though it can start earlier or later, and it begins quite suddenly. By contrast, Type 2 diabetes tends to come on gradually and not until people have passed their middle years.

The metabolic patterns underlying the two forms of diabetes are quite different. Type 1 diabetes results from the destruction of cells in the pancreas that normally produce insulin, a hormone involved in glucose metabolism. Type 1 diabetes is thought to involve the immune system and be the result of an allergic response to toxic chemicals in the environment, a viral infection, or some other unidentified stimulus.

By contrast, people with Type 2 diabetes secrete normal or above-normal amounts of insulin, but their tissues develop an insensitivity to it. Therefore the insulin loses its metabolic effectiveness. Type 2 diabetes, which is by far the more common of the two forms, can often be alleviated by a diet low in carbohydrates and fats, especially when coupled with moderate levels of exercise. Indeed a study of nearly 6,000 middle-aged men, published in the *New England Journal of Medicine*, showed that regular exercise, such as jogging, bicycling and swimming, markedly reduced the incidence of Type 2 diabetes.<sup>6</sup> While this does not rule out the possibility that Type 2 diabetes has a genetic component, other factors clearly play an important role.

Molecular biologists believe that several proteins are involved in the development of Type 2 diabetes and the hunt is currently on to locate, identify and analyse the genes that specify the amino acid sequences of insulin and an "insulin receptor". Once enough is known about the structure and location of these two genes, scientists will be able to develop tests to detect differences in their base sequences. Such tests could then be used to predict a "predisposition" to develop Type 2 diabetes in healthy people who are members of families in which the

condition occurs.

All of this research is being done in the hope of finding a predictive test for a "predisposition" to develop a condition that many people could avoid by changing their diets and getting regular exercise. It would surely be better to educate everyone about the importance of diet and exercise and to work towards providing the economic and social conditions



Brenda Prince/Format

*Even homelessness has now been blamed on genes. Responding to critics who would rather see the money for the Human Genome Project spent on social projects, Daniel Koshland, editor of Science, replied: "What these people don't realize is that the homeless are impaired . . . No group would benefit more from the application of human genetics."*

that could enable more people to live healthily, rather than spending time and money to try and find "aberrant" genes and to identify individuals whose genetic constitution may (but then again, may not) put them at special risk.

The susceptibility to Type 1 diabetes appears to cluster in families and in specific populations, for example, among people of northern European origin. If one child in a family has Type 1 diabetes, the probability of a sibling developing it is about 6 per cent, or twenty times the rate for the general population. While this might seem to indicate a genetic component, it turns out that an identical twin of someone who develops Type 1 diabetes

has only a 36 per cent probability of developing the condition.<sup>7</sup> This is higher than the probability for ordinary siblings, but proves that genes cannot be the sole determining factor. Indeed, since toxic environmental agents and viral infections are thought to provoke Type 1 diabetes, family correlations need not point to a genetic origin. Siblings who live together are often exposed to the same environmental agents.

Nonetheless, molecular biologists are trying to develop predictive genetic tests for this condition. This time they are not looking at the "insulin gene" but at genes that participate in the synthesis of proteins active in immune reactions. Whatever they find, we can be sure that predictive diagnoses will be tentative at best, both because of the complexities of the immune system and because no one knows what factors trigger this particular immune response. We can also be sure that the test will do nothing to reduce exposure to the toxic chemicals that have been linked to the condition.

## From Flawed Science to Social Stigmatizing

If the myth of the "all-powerful gene" is already deflecting attention from the social and environmental causes of disease, it also threatens new forms of social discrimination. Indeed, as Richard Lewontin has argued, the importance of genetic research projects such as the Human Genome Project:

*"lies less in what it may, in fact, reveal about biology, and whether it may in the end lead to a successful therapeutic programme for one or another illness, than in its validation and reinforcement of biological determinism as an explanation of all social and individual variation. The medical model that begins, for example, with a genetic explanation of the extensive and irreversible degeneration of the central nervous system characteristic of Huntington's chorea, may end with an explanation of human intelligence, of how much people drink, how intolerable they find the social condition of their lives, whom they chose as sexual partners, and whether they get sick on the job. A medical model of all human variation makes a medical model of normality, including social normality, and dictates a therapeutic or pre-emptive attack on deviance."*<sup>8</sup>

Questions about the genetic origins of homosexuality, for example, would be of little interest if it were not a stigmatized behaviour. We do not ask comparable questions about "normal" sexual preferences, such as preferences for certain physical types or for specific sexual acts that are common among heterosexuals. Indeed, the reason that the purported "discovery" of a "gay gene" (see Box, p.189) is big news is not that it is any more promising than previous "discoveries" of such genes have been, but that the debate on homosexual rights is topical.

Missed out of the debate entirely, however, is the extent to which sexual orientation is mediated by cultural and social factors. Among the wide range of possible human behaviours, societies select some that they approve of or extol, others that they accept or tolerate and yet others that they dislike, condemn and even persecute. These choices are part of the fabric that holds each society together.

All of us have a variety of erotic feelings. Societies define some of these as sexual and regulate the degree and the ways in which we are permitted to develop and express them. Homosexual behaviours probably have existed in all societies, but our current perception of homosexuality has its roots in the late 19th century. At that time, sexual activities were first used to define the people who engaged in them. Any sexual act that deviated from "the missionary position" could lead to its practitioner being stamped a "pervert". Masturbators, it was said, could be recognized on sight by their sallow and nervous appearance. Homosexuality stopped being what people did and became who they were. As the French philosopher Michel Foucault has written, "The sodomite had been a temporary aberration: the homosexual was now a species."<sup>9</sup>

This way of categorizing people obscured the accepted fact that many people do not have sexual relations exclusively in one way or with either sex. Turn-of-the-century sex reformers, such as Havelock Ellis, while understanding that the categories could blur, began viewing homosexuals as biologically different from heterosexuals. They argued that homosexuals should not be punished for their acts because their orientation was biological, not a matter of choice.

Many still believe that homosexuality would be more socially accepted if it were shown to be inborn. Gay journalist Randy Shilts has said that a biological

explanation "would reduce being gay to something like being left-handed, which is in fact all that it is."

This argument is not very convincing. Until the latter half of this century, left-handed people were often forced to switch over and were punished if they continued to favour their "bad" hand. Grounding difference in biology does not stem bigotry. African-Americans, Jews, people with disabilities as well as homosexuals have been and still are persecuted for biological "flaws". The Nazis exterminated such people precisely to prevent them from "contaminating" the Aryan gene pool. Despite claims to the contrary, this attitude has not disappeared: London's *Daily Mail* reported the latest study in *Science* with the headline "Abortion Hope after 'Gay Genes' Findings."

Studies of human biology cannot explain the wide range of human behaviour. Such efforts fail to acknowledge that sexual attraction, for example, depends on personal experience and cultural values and that desire is too complex, varied and interesting to be reduced to genes. But the genetic research behind such studies can, and does, lead to dangerous and unwarranted conclusions being drawn that have profound social implications.

## Testing and Eugenics

Genetic research opens up new possibilities for reinforcing social control — and for legitimizing that control. Helen Rodriguez-Trias, currently president of the American Public Health Association, cites a 1972 survey of obstetricians which found that "although only 6 per cent favoured sterilization for their private patients, 14 per cent favoured it for their welfare patients. For welfare mothers who had borne illegitimate children, 97 per cent . . . favoured sterilization."<sup>10</sup>

This is classic eugenic thinking, but eugenics can appear in much subtler ways. Testing prospective parents to see if they are carriers of genetic "defects", for example, leads to labelling of large groups of people as "defective". Not only the people who manifest the condition but also the carriers are likely to be considered less than perfect. Such tests are often advertised as altogether helpful because they increase peoples' choices, but it would be a mistake to ignore the ideology that almost invariably accompanies their use.

In 1971, Bentley Glass, retiring as

President of the American Association for the Advancement of Science, wrote:

"In a world where each pair must be limited, on the average, to two offspring and no more, the right that must become paramount is the right of every child to be born with a sound physical and mental constitution, based on a sound genotype. No parent will in that future time have a right to burden society with a malformed or mentally incompetent child."<sup>11</sup>

In a similar vein, the theologian Joseph Fletcher has written:

"We ought to recognize that children are often abused preconceptively and prenatally — not only by their mothers drinking alcohol, smoking and using drugs non-medically but also by their *knowingly* passing on or risking passing on genetic diseases."<sup>12</sup>

Notice that Fletcher absolves doctors of responsibility, singling out "non-medical" drug use. This language of "rights" of the unborn implicitly translates into obligations of future parents, and especially future mothers.

This logic becomes explicit in the writings of Margery Shaw, a lawyer and doctor. Reviewing what she calls "prenatal torts", she argues as follows:

"Once a pregnant woman has abandoned her right to abort and has decided to carry her fetus to term, she incurs a 'conditional prospective liability' for negligent acts towards the fetus if it should be born alive. These acts could be considered negligent fetal abuse resulting in an injured child. A decision to carry a genetically defective fetus to term would be an example . . . Withholding of necessary prenatal care, improper nutrition, exposure to mutagens and teratogens, or even exposure to the mother's defective intrauterine environment caused by her genotype . . . could all result in an injured infant who might claim that his right to be born physically and mentally sound had been invaded."<sup>13</sup>

Shaw not only assumes that a fetus has rights (a hotly debated assumption) but she places the burden of implementing those "rights" squarely on the shoulders of individual women. She does not suggest that women must have access to good nutrition, housing, education and employment so that they are able to secure a fetus its "right" to proper nutrition and avoid its being exposed to mutagens and teratogens. She only urges that "courts



and legislatures take all reasonable steps to insure that fetuses destined to be born alive are not handicapped mentally and physically by the negligent acts or omissions of others." Her language of "rights" does not advocate the kinds of improvements that would benefit women and children. It is the language of eugenics and social control.

## The Eugenics of Normalcy

But the language of eugenics has changed: no longer is there an appeal for overt social engineering through government edict — rather the new technologies will allow eugenics to be accomplished with an illusion of "individual choice". In 1988, for example, the US Office of Technology Assessment published a report on the Human Genome Project.<sup>14</sup> As Evelyn Fox Keller points out, the report "sets the projects' eugenic implications apart from earlier precedents by distinguishing a 'eugenics of normalcy'; that is, "the use of genetic information . . . to ensure that . . . each individual has at least a modicum of normal genes." The report argues that "individuals have a paramount right to be born with a normal, adequate hereditary endowment." Fox Keller comments:

"The 1990s' version of the 'new eugenics' is no longer construed as a matter of social policy, the good of the species, or the quality of our collective gene pool; the current concern is the problem . . . of the 'disease-causing genes' that 'some of us as individuals have inherited'. Accordingly, it is presented in terms of the choices that 'they as individuals' will have to make.

Genetics merely provides the information enabling the individual to realize an inalienable right to health, where 'health' is defined in reference to a tacit norm, signified by 'the human genome', and in contradistinction to a state of unhealth (or abnormality), indicated by an ever growing list of conditions characterized as 'genetic disease'.<sup>15</sup>

## Inventing Disease

The development of tests to detect genes, or substances whose metabolism they affect, opens the door for the invention of an unlimited number of new disabilities and diseases. For any trait that has a normal distribution in the population,

some people can be defined as having "too much" and others "not enough".

Pharmaceutical companies and doctors stand to make a good deal of money from inventing new diseases — based on people not conforming to a "norm" — as fast as new diagnostic tools are developed that can be used to spot or predict their occurrence. Thus, Genentech, one of the first generation of biotechnology firms, markets a genetically-engineered form of human growth hormone. This hormone previously could be obtained

# Gay Genes: Flawed Science

Many modern researchers argue that because no single environmental explanation can account for the development of homosexuality, homosexuality must be genetically determined. But the failure to come up with a clear environmental explanation for a sexual preference is not surprising, and does not mean that the answer lies in biology. Nor, despite publicity to the contrary, have recent studies established a clear-cut genetic link.

A widely-publicized study, published in 1991, tried to determine the extent to which homosexuality is inherited by looking at a group of homosexual men (including some bisexuals) and their brothers. In this study, Michael Bailey and Richard Pillard, researchers at Northwestern University and the Boston University School of Medicine, found that the rate of homosexuality for the adoptive and non-twin biological brothers was about 10 per cent, a rate often attributed to the general population. The rate for the fraternal twins was 22 per cent, and for the identical twins it was 52 per cent.

The fact that fraternal twins of gay men were roughly twice as likely to be gay as other biological brothers shows that environmental factors are involved, since fraternal twins are no more similar biologically than are other biological brothers. If being a fraternal twin exerts an environmental influence, it does not seem surprising that this should be even truer for identical twins, who the world thinks of as "the same" and treats accordingly, and who often share those feelings of sameness.

Moreover, Bailey and Pillard did not simply study a random sample of homosexual men. The gay and

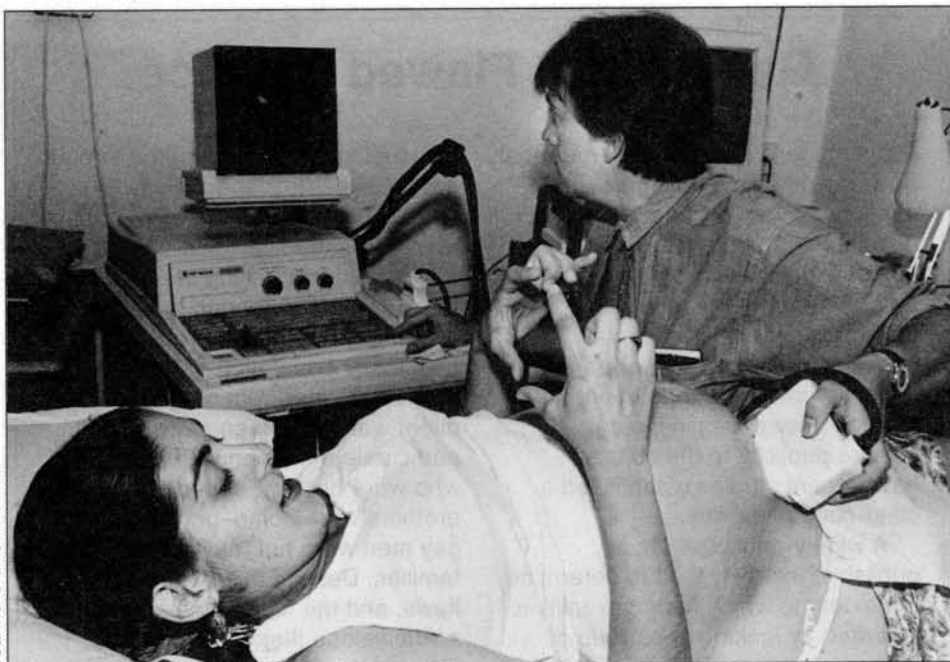
bisexual men "were recruited through advertisements placed in gay publications". So all the respondents read gay periodicals and answered to advertisements asking them about their brothers. Although the advert asked gay men to call "regardless of the sexual orientation of [their] brother[s]", men with gay brothers might well have been more likely to participate than men with brothers who were not gay, especially if the brothers were homo-phobic or if the gay men were not "out" to their families. Despite these, and other flaws, and the fact that the authors acknowledge them in their paper, *Science News* quotes them as saying: "Our research shows that male sexual orientation is substantially genetic."

More recently, researchers from the National Cancer Institute announced in July this year in *Science* magazine that they had found a set of genetic markers shared by 33 of the 40 pairs of homosexual brothers in their study. The implicit reasoning is that if brothers who have specific DNA sequences in common are both gay, these sequences can be considered genetic markers for homosexuality.

There are problems with this reasoning. Of the relatively small number of siblings in the survey, almost a quarter did not have these markers. Also the researchers did not do the obvious control experiment of checking for the presence of these markers among heterosexual brothers of the gay men they studied. It is surprising that the correlation found in this research warranted publication without these controls, especially in as influential a journal as *Science*.

only in minute amounts, by isolating it from the pituitary glands of human cadavers. When the supply was limited, human growth hormone was only used to treat children with pituitary dwarfism, which results from the reduced secretion of this hormone by the pituitary gland. Once the hormone became available in quantity, doctors began to prescribe it to treat people who secrete normal amounts of growth hormone.

In one series of experiments, growth hormone was given to growing boys



*Genetic testing of prospective parents could soon be as commonplace as ultrasound scans during pregnancy. Genetic tests are being promoted as a means of increasing peoples' choice, but identifying people as carriers of genetic "defects" is likely to lead to the labelling of large groups of people as "defective".*

deemed "too short" for their age. A *New York Times Magazine* cover story on these experiments reports that Genentech scientists have suggested that it is proper to consider any child whose height falls within the lowest three per cent of the population as suitable for treatment.<sup>16</sup>

But it is in the nature of characteristics like height that, no matter what their average distribution may be, there will always be a lowest — and highest — 3, 5, or 10 per cent. Dr. John Lantos and his colleagues point out that "of the three million children born in the US annually, 90,000 will, by definition, be below the third percentile for height." Since this "treatment" is not without risks, there is no telling how the health of the children will be affected by daily injections of growth hormone. However, since growth hormone treatment costs about \$20,000 a year per child, if each of these children received a five-year course of treatment, this would constitute a potential market of about \$9 billion a year for Genentech.<sup>17</sup>

Researchers have also suggested that administering growth hormone to old people slows the aging process. A report on the use of synthetic human growth hormone for this purpose appeared in July 1990. The experiment involved twenty-one men aged between sixty-one and eighty-one years.<sup>18</sup> Since all these men were healthy to begin with, the benefits of the treatment were measured by how far it brought a range of "symptoms" (from

mass of fat tissue to skin thickness and bone density) into a more "youthful" range. In effect, the fact that human growth hormone can now be produced in quantity has opened the way for the medical establishment to turn the normal process of aging into a disease.

## Genetic Discrimination

As genetic and other biologically based tests become part of the standard apparatus in hospitals, schools and other institutions, so their routine use "obscures the uncertainties inherent in [such] tests and [leaves] their underlying assumptions unquestioned."<sup>19</sup>

The current love affair with predictive tests for "learning disabilities" sets up the potential for discrimination in the future as well as the present. Norms create deviance, and an "abnormal result" on a biological or genetic test, though it may not blame the child, stigmatizes her or him and projects that stigma into the future.

Diagnostic labels can affect a child's self-image and his or her relationships in school and at home. They also become part of that child's "file", the growing body of data that follow her or him from school to school and job to job. Nelkin and Tancredi, two social scientists, put it this way:

"The use of diagnostic techniques has substantial social force beyond

the educational context. The school system has contact with most children in the society, and is traditionally responsible for assessing, categorizing and channelling them toward future roles . . . School professionals . . . transmit their evaluations to other institutions to help identify who is genetically constituted to assume certain types of jobs. Thus, diagnostic technologies not only help schools meet their own internal needs, they also empower schools in their role as gatekeepers for the larger society."<sup>20</sup>

Nelkin and Tancredi suggest that genetic testing in the schools could become mandatory if enough people come to believe that a specific genetic condition affects behaviour or the ability to learn. This is especially likely if people can be persuaded that such new information will help relieve behavioural problems and so benefit the affected children and their classmates.

It is all too easy for genes to take on a life of their own. Genetic "learning disabilities" are a stigma not only for the child who has them but for all the relatives and descendants of that child. They can be used to show why poor children do not do well in school and to explain why their families became poor in the first place, and will continue to be poor. The tests will serve as an explanation and an excuse, getting schools and society off the hook by placing the blame on the children's unchangeable genes.

## Pre-selecting Workers

The dangers of genetic testing do not end there. In workplaces, genetic tests can be used to screen workers and to monitor them. One reason is to try to minimize health insurance claims by employees.

Another is that it is costly to keep workplaces uncontaminated by toxic chemicals used in the manufacturing process, and to take the various safety precautions that may be necessary to preserve workers' health and well-being. Employers therefore find it easier to use tests that promise to predict the future health of prospective employees, in order to weed out job applicants who might be unusually sensitive to hazards in the workplace. Already, employers have embraced the concept of genetic "hyper-susceptibility" to explain why some workers respond to lower levels of dusts or other contaminants than the "average worker" does.



## Gene "Therapy"

For advocates of the Human Genome Project, the concepts of "genetic disease" and "genetic testing" and "screening" are critical, because their vision of treatment includes "gene therapy". So-called somatic gene therapy is currently being tested in the US. A few children who have a rare, inherited form of immune deficiency are having DNA introduced into their lymphocytes (a kind of white blood cell) in order to mediate the synthesis of an enzyme these children lack. Also, people with cystic fibrosis are having a "normal" copy of the relevant DNA sequence administered by means of an inhaler in the hope that it will help to repair the protein lesion in the cells lining their lungs.

Attempts at germ-line gene manipulation would involve the use of very early embryos, produced in a dish by *in vitro* fertilization. When the fertilized egg has divided into six or eight cells, the scientists would remove one or two cells and test them to see whether the embryo has the mutations the scientists are trying to remedy. Because at this stage all of the cells are still equivalent, removing a couple of them does not damage the embryo. If the embryo has the suspected mutation, the scientists could try and correct it through gene manipulation, before inserting the embryo into the womb of the woman who will carry the pregnancy.

A genetic change introduced into an early embryo gets incorporated into all the tissues of the person into whom the embryo develops, and thus into his or her reproductive cells, the sperm or eggs. Therefore this change will be passed on to the future descendants of the manipulated embryo. To introduce changes into an individual's hereditary line goes way beyond what we ordinarily think of as a justifiable medical intervention. Yet, if the DNA of early embryos proves to be easier to manipulate than DNA in the differentiated tissues of children or adults, some scientists advocate manipulating this DNA. If attempts at somatic gene manipulation have been less successful than promised, germ-line manipulations can be touted as a more effective way to get the same results, not for people with the conditions, but for their descendants. However, if somatic gene manipulations are successful in some cases, people may be persuaded that germ-line manipulations are a logical next step.

As Edward Berger, a biologist, and

Bernard Gert, a philosopher, point out:

"Past experience has shown that exciting new technology, including medical technology, generates pressures for its use. Thus, it is quite likely that if germ-line gene therapy were allowed, it would be used inappropriately. . . . In the real world, researchers will overestimate their knowledge of the risks involved and hence will be tempted to perform germ-line therapy when it is not justified."<sup>21</sup>

Lest this sound unduly alarmist, here is a quotation from Daniel Koshland, a molecular biologist and editor-in-chief of *Science* magazine. Writing on the ethical questions posed by germ-line gene manipulations, Koshland muses about the possibility "that in the future, genetic therapy will help with certain types of IQ deficiencies." He asks: "If a child destined to have a permanently low IQ could be cured by replacing a gene, would anyone really argue against that?" (Note the use of the word "cured" for averting the "destiny" of a "child" who would, at the time of the "cure", be half a dozen cells in a petri dish). While voicing some misgivings, Koshland continues:

"It is a short step from that decision to improving a normal IQ. Is there an argument against making superior individuals? Not superior morally, and not superior philosophically, just superior in certain skills: better at computers, better as musicians, better physically. As society gets more complex, perhaps it must select for individuals more capable of coping with its complex problems."<sup>22</sup>

Clearly, the eugenic implications of this technology are enormous. It brings us into a Brave New World in which scientists, or other self-appointed arbiters of human excellence, would be able to decide which are "bad" genes and when to replace them with "good" ones. Furthermore, the question of whether to identify the functions of particular genes or to tamper with them will not be decided only — or perhaps even primarily — on scientific or ethical grounds, but also for political and economic reasons. We need to pay attention to the experiments that will be proposed for germ-line genetic manipulations, and to oppose the rationales that will be put forward to advance their implementation, whenever and wherever they are discussed.

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# Breast Cancer and the Environment

*Accumulating evidence relates environmental and occupational carcinogens to the escalating incidence of breast cancer in the United States and other major industrialized countries, evidence which has been ignored by the cancer establishment. Recognition of these risk factors should lead to public health policies directed at the primary prevention of breast cancer.*

Breast cancer is a complex and diverse group of malignancies which encompass distinct clinical entities and causes. Nevertheless, three major classes of overall risk factors for breast cancer have been conventionally recognized:

- family history of the disease, particularly at an early age;
- reproductive or "oestrogen-window" factors — early menarche, never giving birth, late menopause, and other exogenous hormonal factors, such as prolonged use of oral contraceptives from an early age, injectable Depo-Provera contraceptives, and long-term post-menopausal oestrogen replacement;<sup>1</sup>
- high fat diet (although evidence for the role of dietary fat *per se* is at best inconsistent and tenuous).<sup>2</sup>

The role of these three risk factors, however, has been incriminated in only 20 to 30 per cent of all breast cancers<sup>3</sup> and cannot account for the escalating incidence of the disease — particularly in post-menopausal women — in the United States, the UK and other major industrialized nations. Incidence rates in white women in the US increased by 57 percent from 1950 to 1988 — more than one per cent annually.<sup>4</sup> These trends cannot be explained away by the relatively-recent increased use of mammography to screen for breast cancer.<sup>5</sup>

None of the heavily-funded US and other nutritional studies on the relation between dietary fat and breast cancer has investigated, let alone considered, the role of carcinogenic dietary contaminants.<sup>6</sup> It has been known, however, since the late 1960s that carcinogenic organochlorine pesticides, such as aldrin, dieldrin, chlordane and heptachlor, concentrate in animal and human fat and induce breast cancer in rodents.<sup>7</sup> This creates a strong presumption for a causal role of such contaminants in human breast cancer, since the sites of cancer induced by carcinogens in experimental animals and humans are generally similar.<sup>8</sup>

Organochlorine carcinogens stimulate oestrogen metabolism and bind to oestrogen receptors in the breast, justifying their recent characterization as "xenoestrogens".<sup>9</sup> The pesticide, DDT, has been shown to promote breast cancers in male rodents which had previously been dosed with the unrelated carcinogen, acetamidophenanthrene.<sup>10</sup> The authors of the study conclude that:

"Because of their fat-solubility and tendency toward long-term deposition in body fat, particularly in the female breast, and the apparent ability of DDT to promote tumours in the mammary gland of the male rat, such agents might be considered possible contributors to the high incidence of breast cancer among women."

In spite of increasing fat consumption and women having fewer children, breast cancer mortality in pre-menopausal Israeli women declined by 30 per cent following regulations in the mid-1970s which sharply reduced the high levels of DDT and hexachlorocyclohexane in dairy products.<sup>11</sup>

Further evidence for the role of organochlorine carcinogens is provided by findings that DDT and PCBs concentrate in human breast cancer, rather than adjacent non-tumorous tissue.<sup>12</sup> These organochlorines also concentrate in breasts with cancer in contrast to those with fibrocystic disease.<sup>13</sup> Additionally, the pesticide hexachlorocyclohexane concentrates in breasts with cancer in contrast to normal breasts.<sup>14</sup>

The chlorinated herbicide, atrazine, one of the most heavily used in the world, has also been implicated.<sup>15</sup> Because of its mobility in soil and stability in water, atrazine is one of the

commonest carcinogenic pollutants in European and US surface waters, often exceeding the US Health Advisory Level of three parts per billion. Atrazine has hormonal effects on the hypothalamic and pituitary glands and gonads and induces breast and other reproductive tumours in rats.<sup>16</sup> It has also been incriminated in human ovarian cancer and malignancies of the lymph glands.<sup>17</sup> Despite this evidence, the role of atrazine in human breast cancer has not been investigated.

Oestrogens are another important dietary contaminant because of their almost unregulated use as feed additives to promote growth in cattle, pigs and poultry.<sup>18</sup> Lifelong exposure to these contaminants is clearly a risk factor for breast cancer.<sup>19</sup> Furthermore, oestrogens are known to act in synergy with the carcinogenic effects of radiation on the breast,<sup>20</sup> possibly further increasing the risk of developing breast cancer after mammography.<sup>21</sup> They also synergize the carcinogenic effects in the breast of polynuclear hydrocarbon carcinogens, such as the ubiquitous benzpyrene, a common air pollutant from car exhausts.<sup>22</sup> Findings of increased breast cancer risk among women with pre-natal exposure

*A Women's Community Cancer Project in Boston marked Mother's Day in 1991 with demands for more federal funds for finding ways to prevent breast cancer.*



Marilyn Humphries/Format/Impact Visuals



to elevated oestrogen levels<sup>23</sup> raises the likelihood of similar effects of pre-natal exposure to maternal residues of organochlorine carcinogens.

Living close to hazardous waste sites has been associated with major increased risks of breast and other cancers.<sup>24</sup> In the United States, the high increase in breast cancer incidence and mortality in Connecticut and suburban New York counties, especially Nassau and Suffolk, has been associated with consumption of milk and water contaminated over the last two decades with nuclear fission products — the short-lived radioactive iodine and the long-lived, bone-seeking strontium-90 — from the Millstone and Indian Point civilian nuclear reactors.<sup>25</sup> An additional environmental risk factor in Nassau and Suffolk counties may stem from extensive past agricultural use of carcinogenic soil fumigant pesticides — the organochlorine, dichloropropane, and the highly potent organohalogen, ethylene dibromide and dibromochloro-propane — all of which induce breast cancer in rodents.<sup>26</sup>

A variety of occupational exposures have also been incriminated as risk factors for breast cancer. For example, a higher than expected incidence of breast cancer has been reported among women exposed to dioxin in a German pesticide plant, as has a higher than expected number of deaths from the disease.<sup>27</sup> Similar findings have been documented for women exposed to petroleum products including chlorinated organic solvents,<sup>28</sup> and among professional chemists.<sup>29</sup>

Without action to curb environmental pollution, it is not surprising that the US government has recently admitted that "there has been no progress in preventing the disease".<sup>30</sup> More surprising and more reprehensible, however, is the persistent failure of the US cancer establishment — the National Cancer Institute and American Cancer Society — to recognise and investigate the accumulating evidence on the role of environmental and occupational risk factors for breast cancer, as well as a wide range of other cancers. The recognition of such risk factors should lead to the development of public health policies directed at primary prevention of breast cancer, and the reinforcement of recommendations for major reforms in the priorities and leadership of the cancer establishment.<sup>31</sup>

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## Out of Africa

**FROM FEAST TO FAMINE: Official Cures and Grassroots Remedies to Africa's Food Crisis**, by Bill Rau, Zed Books, London and New York, 1991, £9.95/\$15.00 (pb), 213pp. ISBN 0-86232-927-2.

The material disasters that confront Africans are frequently depicted as a crisis of food and lack of "development". This crisis — and the perception of it — however, is an outcome of the way Westerners think about the continent, and impose our concepts and priorities on it.

When a picture of Africa is painted in broad brushstrokes, as is typically done by the United Nations, it is of unmitigated gloom. The statistics and images are well-known: "100 million people chronically hungry; 30 million people in 24 countries at risk of starvation in 1984; 25 percent of Africa's food needs being met through imports," reflecting the reported steady decline in per capita agricultural output over two decades.

But if the focus is shifted away from the outsider to the priorities of ordinary people and the initiatives of local communities, then a very different picture emerges: one of resilience and innovation. As Bill Rau notes:

"That starvation did occur between 1983 and 1990 in parts of Africa is a result, not of the failure of people's systems of survival, coping and problem-solving, but of decisions beyond their control which undermined food production and the ability of people to obtain food."

Rau's case is in fact even stronger than the arguments he presents because he omits one important critique. The main

sources of statistical information about Africa's food crisis, the UN's Food and Agriculture Organisation (FAO) and the US Department of Agriculture, are highly unreliable. The methods these institutions use to gather such statistics have a consistent bias, seriously underestimating agricultural production and seriously overstating levels of undernutrition. In addition, they omit foraged food altogether which can be economically and nutritionally as important as farming.

Africa's food crisis is not an overall lack of food, or prevalence of malnutrition — India fares worse on both counts. It is something else. Bill Rau contends that the crisis is "not Africa's crisis". For some three and a half centuries, Africa has not been in control of its own destiny; many of the current ills can be traced to the disastrous impact of imperialism. This is an unfashionable thesis, but it bears restating once again, with colonialism a generation distant, and memories of the Cold War rapidly fading. The legacy of centuries of domination cannot be excised so rapidly. In particular, the holocaust of the 1880-1920 period, when thousands were forcibly dispossessed as the imperial powers transformed Africa into "Europe's plantation" and its peoples into cheap plantation labour, left social, economic, environmental and cultural scars that have yet to heal.

The chances of such scars healing are rendered more difficult by the "medicine" prescribed by the West: invariably it has made the situation worse. Food aid is more a cause of Africa's agricultural problems than a solution, while technical assistance is often misconceived, and obscures the indigenous technical knowledge of local peoples. In agriculture, "export-led growth" has restricted the poor's access to land and food; mechanization has degraded soils; and "indigenous skills and knowledge of crops, soils, environment, manufacturing, and labour relations" have been assaulted "as Africa has become further incorporated into the global political economy." In summary:

"Narrow concepts of development have replaced African concepts of wellbeing; Northern technical expertise has come to be seen as more legitimate than African scientific experimentation and observation. Internal management of social relations for the social good has been subsumed to the control of political power by national élites who maintain links with international capital."

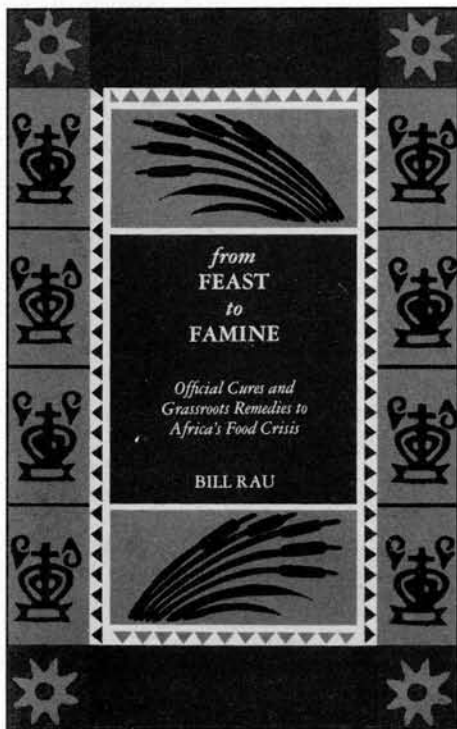
As a result of continuous Western interventions, African economies are pathological creations, dedicated to depredation of the poor and marginal. Economic assistance sustains dictators whose policies impoverish their people. In some of the continent's most famine-ridden countries, capital flight by the wealthy outweighs the official debt of the government.

Bill Rau does an excellent job of exposing the inadequacies of official cures for Africa's crises: identifying the grassroots solutions is far tougher. He points to the continuity between resistance to colonialism and resistance to imposed development as a way forward. Among the concrete examples of those who have chosen to redefine development he cites are farmers in the Segou region of Mali withdrawing co-operative labour from farmers who adopt mechanical equipment, because of the destruction caused by deep ploughing; women's clubs forming informal savings institutions "to better control their own means of production"; farmers resisting the growing of cash crops in place of food crops; and the urban poor in Maputo, Mozambique, forming "green zones" to grow food for local consumption.

But would the removal or neutralizing of "alien" ideas and forces in Africa solve the problem of "whose knowledge counts"? Is the grassroots revolution really so new? Has it, in fact, always been there, in one form or another, resisting successive structures of domination and control? Was popular resistance and grassroots innovation not also present under pre-colonial rulers? Recent analyses of peasant resistance in pre-revolutionary Ethiopia indicate that indigenous states in Africa also generated similar contradictions.

When Bill Rau asserts that "African ideas are missing from Northern development prescriptions for Africa", his argument is in danger of becoming unstuck. We must ask, *which* Africans' ideas are absent, and *which* Africans must gain control over deciding "whose knowledge counts". Although Western ideas, technologies and values have become deeply imbued in Africans, they have their power struggles too. All élites use control of knowledge as a central element in their strategies for retaining power. International connections were key to the maintenance of powerful states in Africa long before colonialism, the West African kingdoms trading widely in gold, ivory, ebony, cloth, salt and slaves.





Another caveat about this otherwise excellent book is that Rau's treatment of pre-colonial Africa, although far from peddling the discredited "myth of merrie Africa", is selective. He says that:

"for hundreds and thousands of years, African societies managed their affairs so as to grow and prosper, to become and remain self-sufficient in food production, and to develop elaborate cultural, ritual and political systems. Values of sharing, cooperation and respect for the forces that remain unseen but are central to peace, harmony and well-being have guided social relations."

In pre-colonial Africa, however, there were also devastating wars and famines, as is evident in the chronicles of the history of Ethiopia. Most pre-colonial African states were anything but benevolent and democratic. They were often the violent expression of class, ethnic, factional or military interests. Rarely were they based upon wealth creation; more often they were dedicated to predation on their neighbours. In short, although not capitalist, they were often imperial too.

Nonetheless, Bill Rau's critique is devastating. *From Feast to Famine* is an excellent, accessible and concise introduction to a valuable, alternative view of the problems confronting Africa.

Alex de Waal

Alex de Waal is a co-director of African Rights and author of *Famine that Kills: Darfur, Sudan 1984-1985*.

## A Marriage of Convenience

**PLANTATION POLITICS: Forest plantations in development**, edited by Caroline Sargent and Stephen Bass, Earthscan, London, 1992, £12.95 (pb), 191pp. ISBN 1- 85383-113-1.

The title of this book is as misleading as its contents. A more appropriate subtitle would have been: "Guidelines for corporate investment in the South". This is because the emphasis throughout is less on the role of forest plantations in development than on how to make plantations acceptable to local people so as to supply industrial countries with "huge, reliable and cheap supplies of uniform forest products".

In spite of this emphasis, *Plantation Politics* could be an extremely useful book, because it points out many of the problems arising from export-oriented industrial tree plantations. Unfortunately, the main issues are omitted: Does the North have the right to decide to plant millions of hectares of industrial tree crops in the South? Are plantations aimed at satisfying local needs such as housing, fuelwood and food or at the consumer needs of the rich? Is industrial tree planting a strategy to foster development in the South or to maintain economic dependency?

Stephen Bass's essay "Building from the past: forest plantations in history" provides sufficient historical proof that plantations are more useful to the rich than to the poor. The increasing area under plantation in the South originates, he contends, from the depletion of North American pulpwood forests and "the realization that tropical and subtropical plantations could produce pulpwood faster and cheaper", which has "precipitated a major movement of pulp company capital to southern climates".

The mushrooming of industrial afforestation in the tropics has had high social and environmental costs. Many schemes have been "imposed on local people... taken land out of food production, alienated people from their land and devastated culturally important species, habitats and landscapes". Because forestry development in the Third World has been externally-oriented, "the basic forest products needs of the peoples of the under-developed world are further from being satisfied than ever". Moreover, history

shows that many countries have century-old traditions of small-scale plantations, usually maintained within intricate mosaics of land use, which "have largely been ignored in industrial plantation development".

The author concludes, however, that plantations are likely to form an increasing proportion of "forests", mostly because "the predicted gap between wood demand and supply in many regions is so large, that only plantations can fill it quickly enough".

Such a conclusion paves the way for three main standpoints of the book's contributors. The first is that plantations are necessary because current and projected needs for wood cannot be met from natural forest regeneration. An ethical discussion on whether or not wood and wood fibre should be used to the extent they currently are is explicitly rejected as not "central to the purpose of the book". Wasteful Northern consumption of wood and paper is thus accepted as an unchallengeable condition which the South has to accommodate with its land and labour, regardless of its own needs.

Secondly, the involvement of corporations in forestry is seen as inevitable and even desirable because "corporations are



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usually better able than governments to increase competitiveness and efficiency" — although corporate tree plantations the world over are viable only through enormous subsidies from the public purse. Looked at in this way, "participation", "sustainability" and "people's needs" are meaningless. What really matters is the Northern need to put vast areas of the South under tree plantations.

Thirdly, the environmental impacts of tree plantations are not taken seriously into account. The authors contend that understandable local people's concerns "have readily been stimulated by radical environmental opinion . . . in pursuit of political goals". Although farmers point to what are described as the "supposed environmental disbenefits" of eucalyptus, the battle is said not to be about eucalyptus but "about power". The latter is true and crucial: but it is also undeniable that large monoculture tree plantations — whether of eucalyptus, other exotic species or even native ones — have important impacts on the environment. *Plantation Politics* dedicates only four confusing pages to biodiversity (plantations may increase it), soil structure (fertilizers may need to be added), soil erosion (people collecting litter within plantations are responsible for erosion), hydrology (plantations can be good and bad) and climate.

Thus if industrial tree plantations are necessary, corporate involvement inevitable and environmental impacts mixed, the only question lies in where and how to implement the plantations. Two types of plantations are considered appropriate and complementary: simple and complex.

Simple plantations are monoculture tree crops, grown to meet industrial wood demands, preferably established on sites inherently more productive, on land without alternative claims, and in countries whose economies are relatively stable. This is obviously the type of plantation of most interest to corporations.

The option of complex plantations is a "necessary compromise" whenever there are competing rights, needs and interests, and land is scarce. These multiple-species plantations are diverse in structure, having mixed uses and users, but are less attractive to corporate investment.

A possible third course of action, mentioned at the beginning of the book, "to manage, protect and use natural forest more wisely and effectively than at present", is abandoned without further discussion.

The editors thus conclude that plantation politics should "foster appropriate partnerships between people and industry; and industrial plantation practice should marry traditional forestry approaches and industrial techniques".

This wedded pair, however, are unlikely to live happily ever after. Large-scale industrial plantations are by definition designed for a single purpose — high yields of wood — and are cash-oriented. In traditional forestry, wood is only one (and seldom the most important) of the potential benefits derived from trees. The former serves the interests of the powerful, both local and foreign, with high social, economic and environmental costs, while the latter favours local communities and is based on environmentally-friendly techniques. A marriage of the two would undoubtedly serve the interests of corporations, but would cause daily conditions in the South to deteriorate still further. The conclusion should be obvious but is worth stating anyway — stop industrial tree plantations in the South.

Ricardo Carrere

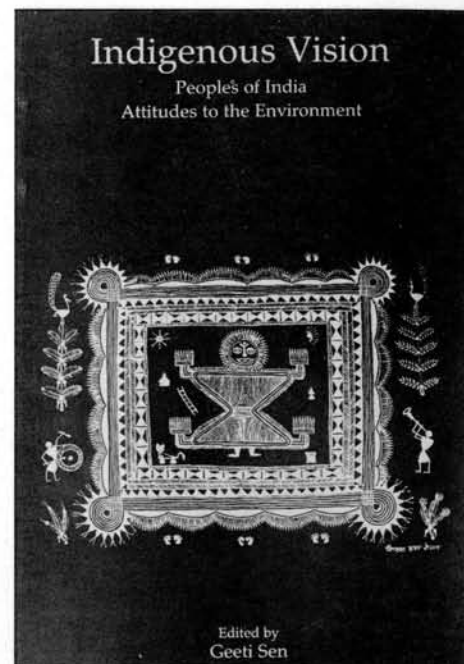
Ricardo Carrere is a Uruguayan forester and environmentalist working at the Third World Institute in Montevideo.

## Vision and Illusion

**INDIGENOUS VISION: Peoples of India, Attitudes to the Environment**, edited by Geeti Sen, India International Centre, New Delhi and Sage Publications, London, 1992, £35.00/\$44.00 (hb), 314pp, ISBN 81-7036-308-X(India), 0-8039-9450-8.

*Indigenous Vision* reflects the current search among urban intellectuals for an alternative to the vision of modern development, a vision focusing on "the wisdom of indigenous peoples to live in harmony with nature".

Such a search, however, can come dangerously close to treating indigenous cultures as a conceptual resource, and using indigenous people's ecological wisdom to justify their existence. Its title might suggest that the book is concerned with the indigenous or tribal peoples of the Indian sub-continent, but less than half the 24 chapters are explicitly about the peoples themselves and not one of the 27 contributors is indigenous.



Within a widely disparate collection of articles, there are some real gems. But some well-meaning, educated people can do a considerable disservice to indigenous peoples, albeit unintentionally, of which there are several examples in this book.

Krishna Chaitanya, a renowned interpreter of the Gita, the Hindu gospel, treats indigenous culture in his essay "The Earth As Sacred Environs" as just another philosophy to be sorted, sifted and interpreted. He points out the danger of overrating indigenous rituals as authentic expressions of a concern for the environment — a fair point, but his judgement that these rituals are inferior to the wisdom of the Gita is clearly misdirected. The myths and rituals of indigenous societies are not equivalent to philosophy — Eastern or Western — and should not be treated as such.

Although other contributors have a more positive assessment of indigenous wisdom, their interpretations attempt to turn indigenous culture into a thoroughly coherent conceptual world view with all the answers to sustainable living. According to such a world view, indigenous people live in harmony with "nature" because they worship the Earth and everything that lives as holy, and because they see themselves as an equal part of "nature". The practice of animal or human sacrifice sits uncomfortably within this conceptual framework, but so as not to disturb its perfection, "developed" but disillusioned intellectuals "interpret" blood sacrifice almost to the point of advocating it.

A number of contributors assert that indigenous peoples see themselves as part of nature, but from the descriptions of



those who have lived and worked with them, it is more a case of indigenous people seeing nature as part of them. As Suneet Chopra explains in "Garo Myths: The Environment as Lexicon", indigenous peoples make nature a part of their society by giving natural phenomena human characteristics, and relating to them through custom and ritual. This type of anthropocentrism enables peoples to live a way of life which cares for the environment.

For indigenous peoples, their mode of being, consciousness and expression is their wisdom: it cannot be separated out. For example, Westerners often dismiss the art of indigenous peoples, like the people themselves, as primitive. The error of this perception is amply demonstrated by painter J. Swaminathan in his article on Adivasi art. Adivasis — the term refers to the tribal peoples of India and means the "original dwellers" — do not use perspective, but this is not because of any mental or technical deficiency. The objective of their art is not to reproduce reality as seen by the naked eye, but to create a parallel reality of the imagination.

Photographs of Warli paintings accompanying Winin Pereira's excellent article on the sustainable lifestyle of the Warlis, one of the tribes to the north of Bombay, provide an enticing taste of Adivasi art. Pereira highlights the two main threats to the Warlis' societies: enforced conformity to mainstream beliefs through educational, health and agricultural systems, and dispossession of their lands for dam or logging projects.

Empathetic observers such as Sandhya Chatterji, Dunu Roy and David H. Turner reveal that indigenous societies are, or were until relatively recently, stable, whole societies, able to adapt, using their own approaches, to incorporating new knowledge and new techniques. What the "developed" world needs to learn from indigenous peoples is not knowledge of medicinal properties of plants or techniques of crop cultivation, but the simple truth that ecological sustainability and social stability go together, stability gained by learning from their past, respecting leaders and ancestors, and teaching, through custom, routine, myth and ritual, the sustaining qualities of duty and discipline. This is the indigenous vision.

*Nigel Pamphilon and Aditi Sharma*

**Nigel Pamphilon** is a student of history and economics; **Aditi Sharma** works for Survival International, which campaigns for the rights of tribal peoples.

## BOOKS DIGEST

- **TREES, PEOPLES AND POWER: *Social Dimensions of Deforestation and Forest Protection in Central America***, by Peter Utting, Earthscan with UNRISD, London, 1993, £14.95 (pb), 256pp. ISBN 1-85383-162-X.

Focusing on the social pressures and political conflicts behind the loss of tropical forests in Central America, Utting considers the processes and players in deforestation and the breakdown of traditional resource management systems. He analyses how social and political factors affect forest protection and tree planting initiatives.

- **ECO-SOCIALISM: *From Deep Ecology to Social Justice***, by David Pepper, Routledge, London and New York, 1993, £10.99/\$15.95 (pb), 266pp. ISBN 0-415-09719-3.

Although Pepper accepts that "sustainable, ecologically sound capitalist development is a contradiction in terms", he contends that radical environmentalism has lost direction. This widely-researched and persuasive book, emerging from the red-green debate, proposes synthesizing aspects of Marxism, anarchism and deep ecology into a green, socialist politics which is radical, socially just and environmentally benign.

- **LIVING LABORATORIES: *Women and Reproductive Technology***, by Robyn Rowland, Lime Tree, Michelin House, 81 Fulham Road, London SW3 6RB, UK, 1992, £16.99 (hb), 366pp. ISBN 0-413-45521-1.

The rapidly-widening gap between natural reproduction and scientifically-mediated conception and procreation raises an important and seldom-considered question: who is in control of reproduction? As children become the products of commerce, science and medicine, and women's bodies experimental raw material, it is important to look behind the values of medical science, the language of the new reproductive technologies, and the associated cooption of rights, desires and responsibilities.

- **MONOCULTURES OF THE MIND: *Biodiversity, Biotechnology and the Third World***, by Vandana Shiva, Third World Network, Penang, 1993, \$12.00 (pb), 184pp. ISBN 983-9747-04-5.

A collection of five essays weave together reflections on the disappearance of diversity — in nature, communities, technology and alternatives — and the implications of biotechnology. Conservation and official solutions tend to impose uniformity, exacerbating the loss.

- **CLIMATE CHANGE and its Biological Consequences**, by David M. Gates, Sinauer Associates, Sunderland, MA, (distributors W. H. Freeman, Oxford) 1993, \$47.50/£16.95 (pb), 280 pp. ISBN 0-87893-224-0.

"A lack of information is not an adequate excuse for doing nothing. Those scientists modelling ecosystems and climate change are doing the best they can with the tools and information available." Using such information from North America, Gates outlines clearly some probable effects of climate change on forests, agriculture, animals and ecosystems.

- **COOL ENERGY: *Renewable Solutions to Environmental Problems***, by Michael Brower, MIT Press, Cambridge, MA and London, 1992, \$12.95/£11.75 (pb), 219pp. ISBN 0-262-52175-X.

A practical response to climate change, *Cool Energy* looks at current renewable energy technologies as well as identifying market barriers and policy alternatives to their implementation. It concludes that renewables could now be cheaper than fossil fuels.

- **MANAGING THE MULTINATIONAL: *Confronting the Global-Local Dilemma***, by Samuel Humes, Simon & Schuster, New York and London, 1993, \$39.95/£19.95 (pb), 406pp. ISBN 0-13-555137-4.

A useful, although uncritical, textbook describing the "multidimensional organizational complexity" of modern multinational companies, including case studies of 26 US, European and Japanese corporations.



## Letters

### Car Madness

I very much welcomed your issue on transport policy (*The Ecologist*, July/August 1993). This kind of tough, careful research and reporting is today one of our most urgent needs, if only to point out the sheer insanity of how we are currently behaving.

If four or five thousand British people — men, women and children — were taken out in batches by some psychotically murderous authority, put against a wall and shot — what government could hope to survive its indifference to such a catastrophe? There would be a national day of mourning, messages from the Queen, countless clergymen would follow a lead from the Archbishop of Canterbury by offering up special prayers, the crime would be denounced from pulpits across the country, there would be a special fund established to help the orphaned and the bereaved.

Yet this is the number of people murdered by road vehicles *every year*, and nobody, not the government, the Queen, the Archbishop nor anyone else so much as bats an eyelid. When are we going to come to our senses? When are we going to act to stop this quite needless carnage, which includes something like five times the same number seriously injured, and often maimed for life? Where on earth is our sense of proportion? Our ordinary instinct of pity and compassion? Our sense of justice? Our feelings of moral outrage? Or do we suppose we can shut off such things in one sphere whilst keeping them alive in others?

Cigarette advertisements are now obliged to carry the warning that "smoking can damage your health". Why are motoring advertisements not obliged to carry the warning "cars kill"? And why does not the price of a car include the *full cost* of road building and maintenance,

police and traffic warden surveillance, ambulance and hospital expenses, support for consequential widows and orphans, the cost of funerals, the appalling blight it inflicts on urban life and the desecration of vandalism it inflicts on our countryside?

I regularly travel to the Midlands by a fast, Intercity train; part of the track runs along a canal on one side and a motorway on the other. To sit in comfort and safety whilst travelling at speed and view the wear and tear of the environment, of the machinery and of human nerves visible on the motorway is to be made doubly aware that whatever claims we may feel we can make for being democratically governed, our society is dominated by evil forces bent on creating a pattern of life which is as fundamentally insane as it is monumentally self-destructive.

We need urgently a national convention to counter the car madness and to establish how our transport system can be made safe, serviceable, in harmony with such needs as we may have for mobility as distinct from mere ego-tripping or selfishness and, not least, how it can reflect our reverence for the mystical wonder of nature instead of assaulting it with the depravity of a heavy-booted skinhead on a psychedelic rampage.

**John Papworth**

Fourth World Review  
24 Abercorn Place  
London NW8, UK

### The Folly of Free Trade

Your editorial on "The New Protectionism" (*The Ecologist*, May/June 1993) could not have been more welcome to those of us who equate free trade with social folly.

A considerable case can be made for the thesis, first proposed years ago by the biologist René Dubos, that because of the hundreds of thousands of years during which humankind existed in small groups of hunter gatherers, a deep need for community life has become encoded in our genes.

If that is the case, then free trade must share with the internal combustion engine the obloquy of being a key cause of today's increasingly dysfunctional community life. When a business or factory is suddenly wrenched from a community because free trade allows its owner to make greater profits in another country, the losing community suffers two blows: the loss is a wound to its social fabric, while the knowledge that a similar

fate could await others introduces a destabilizing level of anxiety.

A culture which values trade over community coherence should not be surprised if the long-term upshot is social decline.

**Colin Graham**

598 Meldram Drive  
Sidney, British Columbia  
CANADA

### The Body Shop Replies

We are disappointed that *The Ecologist*, a respected journal, would choose to print such a facile and inflammatory piece about such an important issue ("The Rainforest Harvest: Who Reaps the Benefit?", *The Ecologist*, July/August 1993). And to choose Stephen Corry, the director-general of Survival International, as the only person to present the issue is a joke.

The editors of *The Ecologist* know the background to the debate about sustainable trading in rainforest products. Knowing that there are strong arguments on both sides, why would they publish only one side of the debate? Very strange indeed. Neither The Body Shop nor Cultural Survival were ever approached to submit responses, nor were any of the facts in the article checked with us. No journalist at *The Ecologist* ever researched the issue. While respected journals like *Scientific American* (and many others) have writers exploring the debate from both sides, *The Ecologist* obviously felt it best served its readership by publishing a poorly researched diatribe. No one's interests are served by this sort of approach, especially not indigenous peoples, who are calling for concrete action, not tired rhetoric cast from ivory towers.

The article indicates how little Stephen Corry is interested in having a dialogue. We have provided him with corrections to many of his factual inaccuracies, but he ignores the facts: they don't fit his argument. In fact, his ignoring of our continued corrections is simply astonishing. Beyond that, he is just plain insulting. So, here we go again.

Stephen Corry is a destructive and ineffective leader of a highly respected NGO (although the board of Survival International claim to support his every statement). His manic behaviour and allegations of his improper conduct led to the entire Spanish office walking out last year. I suggest this needs further investigation. Their USA office closed through



lack of support, and he is seen as a destructive and negative force by almost every NGO I talk to. He has even restricted debate within Survival International. Journalist and Survival International member, Edward Whitley, recently visited the Kayapo Brazil Nut Oil project and found it running well. His letter submitted to the Survival International newsletter was never published.

The problem is the facts: Stephen Corry doesn't have any of them. His is an opinion piece. He doesn't talk about anything to do with numbers, dates, actions. He is in the abstract: nowhere does he give us concrete examples of what happens at the village level. Does he really know what's going on? Certainly not in Kayapo, where his organization has never visited. In fact, he and his organization are not welcome in some of the Kayapo villages. Recently, the Kayapo have stated that they will only work with people who are supportive of their attempts to find a viable alternative to logging and mining. Stephen Corry's vicious condemnation of the Brazil Nut Oil project and Chief Paiakan in the world-wide press (including Brazil), has been read by the Kayapo. And after considering the printed material, they have taken a decision to only allow those people into their villages who are their friends. They don't consider Survival International to be friendly.

The article asks "Who Reaps the Benefit?" of the rainforest harvest. Obviously, it is Stephen Corry and his ill-aimed attempt at generating public interest in himself, not indigenous peoples.

When Stephen Corry formally protested Anita Roddick's participation in the recent World Conference on Human Rights in Vienna, he was ignored by the organizers. They had never heard such painfully facile dogma. She spoke despite the protest from Survival International, the only one of more than two thousand NGOs to do so. We should all do the same as the conference organizers in Vienna, and get on with a productive dialogue on indigenous issues.

Stephen Corry asks for the harvest to be opposed. The one major problem is that he has never asked indigenous peoples involved in the trading projects for their opinions. His claims that indigenous peoples' self-determination be respected is a ruse. He'll listen to their perspectives as little as he listens to anyone else's. As one Australian Aboriginal said last year about Stephen Corry's call to oppose the harvest: "People who tell me who I can and cannot trade with are more dangerous

than the bulldozers."

Stephen Corry calls for us to forget the rainforest harvest and get human rights issues into the media. Is that why The Body Shop has helped garner press attention lately for the struggles of people like the Ogoni in Nigeria while we hear nothing from Survival International except this tired, old attack? We are getting on with the work. Why won't Stephen Corry?

To answer Stephen Corry's strange accusation concerning the origins of The Body Shop, no, the idea for and the name of The Body Shop have nothing to do with America. These are the creations of Anita Roddick, who started the company some 18 years ago in Brighton. Yet, even if influenced by America, is there anything inherently wrong in that? Since we have shops in Malaysia, Stephen Corry somehow implicates us in the abuse of indigenous peoples there. In fact, we have a close relationship with indigenous peoples there, and have actively supported the cause of the Penan in Sarawak — even visiting their blockades of loggers. This is like saying that Survival International once having had an office in New York implicated them in the abuse of Native Americans. Astonishing.

Stephen Corry has two main platforms in his argument with us which he wilfully distorts with half-baked truths and some downright lies. He contends that we see the harvest of sustainable products as being "the solution" for the rainforest and its inhabitants and that this somehow prevents any further activity taking place. As a central argument this is ludicrous. We have never maintained this approach as being the only way forward. Our wide range of activity in Brazil supports my view. For three successive years we have supported three groups with US\$225,000 in total to continue the fight in Brazil on a broad front:

- CEDI, the best known human rights group in Brazil, which for twenty years has acted as an information gathering and dissemination bureau on behalf of all indigenous groups in Brazil;
- UNI, the Union of Indian Nations, whose new office and research project in Goiania we helped to fund;
- NDI, a very important non-governmental organization composed mostly of lawyers, who fight cases principally centered on land rights creating precedent in Brazil under their new constitution.

These are the people active in Brazil from whom we take advice and not the hysterical Stephen Corry, who has never been near the Kayapo region.

Apart from supporting those three

organizations, in this country we ran a major campaign to halt the burning of the Amazon which collected over one million signatures. So, Stephen Corry is right in saying that campaigns are crucial to making change. That's why we run them, and why we ran a campaign highlighting the plight of the Yanomami in conjunction with Survival International in 1989. Early last year we funded the kick-off of the Cari-Oka Gathering with some \$70,000. Cari-Oka was the very important gathering of indigenous people from all over the world that ran concurrently with the huge UNCED meeting in Rio.

Stephen Corry's other theme to which he returns again and again focuses on the fact that he considers our Brazil Nut Oil project to be divisive among the Kayapo. This is rubbish. The Kayapo are not a placid people; their history is one of internal strife with villages breaking into factions and eventually dividing into sub-villages. As is normal with these frequent arguments the focus of the argument is rarely the underlying reason. A-ukre, the village where Paiakan lives, is a split from Kubenkankren that took place some ten years ago and both the villages of

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Kubenkokre and Pukanu are the result of a similar split. The more recent split of a village was mostly the result of a personal dispute between Mokuka and Paiakan. This had been long-running before we came to A-ukre. Stephen Corry has seized on this to point to the project as being disruptive.

Since the beginning of the Brazil Nut Oil project, I have had approaches from the chiefs of five other villages to see how soon we could extend the project. The project began some four years ago, when we were invited by the Kayapo to a meeting in the village of A-ukre with many chiefs from other villages as well. It was at their invitation that we began our association with the Kayapo and we could not continue without their full involvement. Anyone who knows these very strong, aggressive, intelligent people would be aware that any thought of "controlling" them is absurd. I go to the villages for about six weeks in the year. We discuss for days on end how we can improve the project and its future. The Kayapo have very strong views about how this is to happen and their views always prevail. In contrast, Stephen Corry sits in his ivory tower in London giving opinions based on inaccurate and second-hand information.

Our latest commitment to the Kayapo has to do with their health. Through a project run through The Body Shop Foundation, we have been able to secure over two million dollars to be used to care for the Kayapo's health over the next few years. All the Kayapo villages will receive free health care for some two years (they pay at present), and we are now looking for further funding to extend the programme. What has Survival International done for the health of the Kayapo? This is what the Indians ask. We should all ask.

And we are determined to do still more in our relationship with the Kayapo. To help protect both the Kayapo and ourselves, we are setting up a programme in conjunction with The Foundation for Ethnobiology, the Kayapo, and The Body Shop, so that an Intellectual Property Rights agreement can be signed between the Indians and ourselves. This programme will examine the present state of the relationship between the two parties, and consult both sides so that future discoveries of useful products in Kayapo territory will be guaranteed compensation. The project is consulting with a large group of experts worldwide, and has set up a debate mechanism within The Body Shop itself in order to approach the issue thoroughly. Hopefully this agreement will act as a precedent for other relationships with indigenous peoples and their

ethnobotanical knowledge. This Intellectual Property Rights project is our call to action for other companies and organizations to sign these agreements. Until now, companies have looted the genetic resources of indigenous peoples. We believe that it is crucial to the protection of these biodiverse environments, and the survival of their custodians: the indigenous and traditional peoples throughout the world.

We posit a new way of operating as a business. This sentiment arises out of our belief that buying is an ethical act. Unfortunately, we live in an immoral economy, where we don't know how things get to us. Our trading projects (none of which Stephen Corry has ever visited) provide some sort of awareness for consumers that the items they buy treat primary producers fairly, and with respect.

Our trading projects like that with the Kayapo are small-scale enterprises. No one has ever said they were large. The Kayapo project will provide us with some four tonnes of Brazil-nut oil this year, from two village co-ops. All the other projects we are involved with are very modest.

Our message to the consumer is this: we lobby members of parliament, timber importers, we write to governments, press, and companies. We do mobilize public opinion with international campaigns like Stop the Burning. Our projects are out to change our immoral economy into a more moral one. Consumerism needs to undergo a radical change. And it won't go away, so how do we make it more responsible to everyone? Don't tell me that Stephen Corry or his Survival International staff don't eat candy bars or wash their hair.

Stephen Corry says that timber production is the inevitable conclusion to our sort of trade. Ridiculous. We say that one of the options for some indigenous peoples may be small-scale trading relationships. No one has ever, ever said that there is an inevitability to all of this. The range of options open to indigenous people should allow them to fight the best fight. Land rights are of primary importance. But after that (and some Kayapo have won their land rights) what do they do? The Kayapo are still under siege from loggers and miners. We hope they might see the Brazil Nut Oil project as a better option.

If Survival's half-baked campaign against initiatives like the Brazil Nut Oil project succeed, they must take responsibility for throwing some of the Kayapo villages into the arms of the waiting logging and mining interests. Is this in the interest of the Kayapo? Has Stephen

Corry ever asked them? He has been asked to approach the Kayapo about the details of their project on many occasions. He has never contacted them.

Indigenous people consistently argue that they often have no option but to be a part of the market economy. Why shouldn't they choose partners who respect their cultures and environments?

As has been put to him on several occasions, Stephen Corry has no alternatives to offer. He doesn't care to deal with the terrible difficulties facing communities like the Kayapo. He has said that he believes indigenous people can be a part of trading projects. He's concerned about their needs being listened to. Well, it's the only way we do business.

We agree that these issues surrounding indigenous peoples should be debated. Yet, while our trading partners are satisfied with us, the petroleum, mining, logging multinationals perpetrate countless crimes against indigenous peoples. Stephen Corry cannot find a column inch to tell us about these things. He's simply found some sort of Quixotic mission for himself, forgotten to listen to indigenous people (who choose to participate in these projects) and in the end, publishes an opinion piece without any research about the projects he criticizes.

If Stephen Corry and the editors of *The Ecologist* think that harvesting four tonnes of Brazil-nut oil a year in Kayapo territory is harming the environment and communities more than the many millions of dollars worth of logging and mining concessions, at best you're confusing the issue, and at worst criminally ignoring the real problems indigenous peoples face.

Stephen Corry lives in a vacuum. Many indigenous peoples see programmes like The Body Shop's as a viable option. Can we be so patronizing as to tell these people what is good or bad? How can we say they are not informed enough to make these sorts of decisions? Stephen Corry's worst conceit is that he claims to speak for indigenous peoples. We will never make that claim. No one should.

#### **T. Gordon Roddick Chairman**

The Body Shop International PLC  
Watersmead, Littlehampton  
West Sussex BN17 6LS, UK

*The editors regret that this issue has become personalized. The article "The Rainforest Harvest: Who Reaps the Benefit?" was published because we felt it raised important questions about indigenous rights, trade and the environment.*



# Classified

## DIARY DATES

**September 18-19, 1993:** 4th Annual Meeting of **COMMUNITIES AGAINST TOXICS** at Wallsey Town Hall, Wirral, Merseyside. For further details and accommodation, contact Alan Kennaugh, 2 Balfour Road, Wallasey L44 5SQ, UK. Tel: 051-638 2949.

**September 27-29, 1993:** ASE '93. Third international conference on **APPLICATIONS OF SUPERCOMPUTERS IN ENGINEERING**, Assembly Rooms, Bath. Programme and Booking Form from: Jane Evans, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO4 2AA, UK. Tel: 0703 293223, Fax: 0703 292853. Full programme of other courses and conferences also available.

**September 25-October 1, 1993:** **SUSTAINABLE VILLAGE-BASED DEVELOPMENT**. International conference to be held at the Holiday Inn, I-25, Fort Collins, Colorado, USA. Further details form Dr. Maurice L. Albertson. Tel: +1 (303) 491 5753, Fax: +1 (303) 491 6787.

**September 29-October 1, 1993:** **CUSTOMER CARE IN THE COUNTRYSIDE**. A practical review of techniques to meet customer needs and expectations in countryside recreation. Organized by the Countryside Recreation Network. Contact: Robert Wood, Tel: 0222 874970.

**October 1-3, 1993:** **IT'S OUR WORLD TOO**, a conference on local-global approaches to environmental education organized by the Development Education Centre (Birmingham). Venue: Losehill Hall, Derbyshire. Details from: Ian Clason, Development Education Centre, Gillett Centre, Selly Oak Colleges, Bristol Road, Birmingham B29 6LE, UK. Tel: 021-472 3255.

**October 2-3, 1993:** **CENTRES FOR CHANGE CONFERENCE** to be held at York, bringing together centres promoting peace, environment, development and justice. For further details, contact: York Peace Centre, 15A Clifford St, York YO1 1RG, UK. Tel: 0904 642493.

**October 4-7, 1993:** **ENVIRONMENTAL PROTECTION 1993** to be held at Brighton, UK. Full programme available from the Society for Clean Air and Environmental Protection (NSCA), 136 North Street, Brighton BN1 1RG. Tel: 0273 326313, Fax: 0273 735802.

**October 9, 1993:** Rally for a **NUCLEAR FREE WORLD** with opening speech by Lord Donald Soper. To be held at Westminster Central Hall, London. Tickets £3 (£1 unwaged). National Peace Council, 88 Islington High Street, London N1 8EG.

**October 18-22, 1993:** **COUNTRYSIDE RANGERS COURSE** organized by the Countryside Commission. Details from Pat Webb, Capel Manor Horticultural and Environmental Centre, Bulls Moor Lane, Enfield, Middlesex EN1 4RQ. Tel: 0992 763849.

**October 25-30, 1993:** **CITY '93 — Environment and Public Health in Modern Society**, covering urban environment, social issues and health in cities. Held at Antwerp in Belgium. Details from EPH Secretariat, Uitbresidingestraat 506, B-2600 Antwerp, BELGIUM. Tel: +32 (3) 230 9232, Fax: +32 (3) 230 1644.

**November 5-6, 1993:** Public Employees for Environmental Responsibility (PEER) is sponsoring the second annual **PROTECTING INTEGRITY AND ETHICS CONFERENCE**. To be held in Washington, DC, USA. For details, contact Karla Nemeth, Tel: +1 (202) 408 0041.

**November 17, 1993:** **IS THERE LIFE BEFORE DEBT?** A conference on health and international debt, hosted by MEDACT, Christian Aid and Worldware at the Kings Fund Centre, 126 Albert Street, London NW1 7NE. Contact: MEDACT, 601 Holloway Road, London N19 4DJ. Tel: 071-272 2020, Fax: 071-281 5717.

## CALL FOR PAPERS

Second International Conference on **Air Pollution**, 27-29 September, 1994 in Barcelona, Spain. Organized by Wessex Institute of Technology, Southampton, UK. Abstracts by 30 November 1993 on the following subjects: Modelling, Monitoring and Laboratory Studies, Data Analysis and Observation, Pollution Management, Pollution Engineering, Interaction of Modelling with Experiments, Urban Case Studies, Emission Inventories, Regulatory Bodies. Enquiries to: Liz Johnstone, Conference Secretariat, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO4 2AA, UK. Tel: 0703 293223, Fax: 0703 292853.

Fifth International Conference **ENVIROSOFT 94**. Development and Application of Computer Techniques to Environmental Studies 16-18 November, 1994, San Francisco, USA. Organized by the Wessex Institute of Technology, University of Portsmouth, UK. Papers wanted on recent advances in environmental software, organization of theories into structural algorithms, mathematical models, software optimization, scope and application of computer programmes, etc. For details, write to Sue Owen, Conference Secretariat, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO4 2AA, UK. Tel: 0703 293223, Fax: 0703 292853.

## MISCELLANEOUS

**The Alliance for the Rights of Indigenous Peoples (ARIP)** is a coalition of UK based groups established to support the struggles of indigenous peoples for their rights. You can help by joining ARIP or by giving a donation. For details, contact Emma Wright, ARIP, CAFOD, 2 Romero Close, Stockwell Road, London SW9. Tel: 071-733 7900, Fax: 071-274 9630.

**Internship Programme at Saferworld.** Two unsalaried internships are offered: Media Intern and Government Relations Intern. For applications, contact Sue Maskell at Saferworld, 82 Colston Street, Bristol BS1 5BB. Tel: 0272 276435, Fax: 0272 253305.

**Tinkers Bubble Trust.** Are you interested in joining with others to buy land for low-impact living and agriculture? Wessex-based group. For more information, contact Simon Fairlie, Tel: 0258 473795.

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Marcus Colchester and Larry Lohmann (eds.), *The Struggle for Land and the Fate of the Forests*. Based on six countries, the book illustrates the complexity of the problem with a large section discussing future options to avoid total destruction of the ecosystems. 389pp, paperback, 1993, £9.

Third World Network, *Modern Science in Crisis: A Third World Response*. This book provides a scathing and comprehensive critique of modern science as well as the essential ideas for a reconstruction of a holistic alternative science that respects life. 81pp, paperback, 1988, £4.

Bharat Dogra, *Living for Others: Vimla and Sunderlal Bahuguna*. A charming and inspiring story about the couple who led the Chipko movement and are continuing to dedicate their lives in the struggle to protect the environment. With black and white photos. 64pp, paperback, 1993, £3.

Lester R. Brown et al, *State of the World. 1993*. The latest Worldwatch Institute Report on progress towards a sustainable society. 268pp, paperback, 1993, £6.50.

Jack Frazier, *The Great American Hemp Industry*. Hemp is a fast-growing plant and sustainable for producing paper, fibre, food and fuel, paperback, 1991, £4.50

Peter Bunyard (ed.), *New Responsibilities: The Indigenous Peoples of the Colombian Amazon*. This report provides an insight into new government policies concerning indigenous land rights and conservation. 160pp. with maps, graphs and b&w photos, 1993, £18.00

Evelyn Hong, *Natives of Sarawak*, 265pp, paperback, 1987, £5; World Rainforest Movement, *The Battle for Sarawak's Forests*, (new edition), 303pp, paperback, 1990, £8.50. Essential reading for those interested in Sarawak and its natives, the tropical forests and the rights of indigenous peoples in the Third World.

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