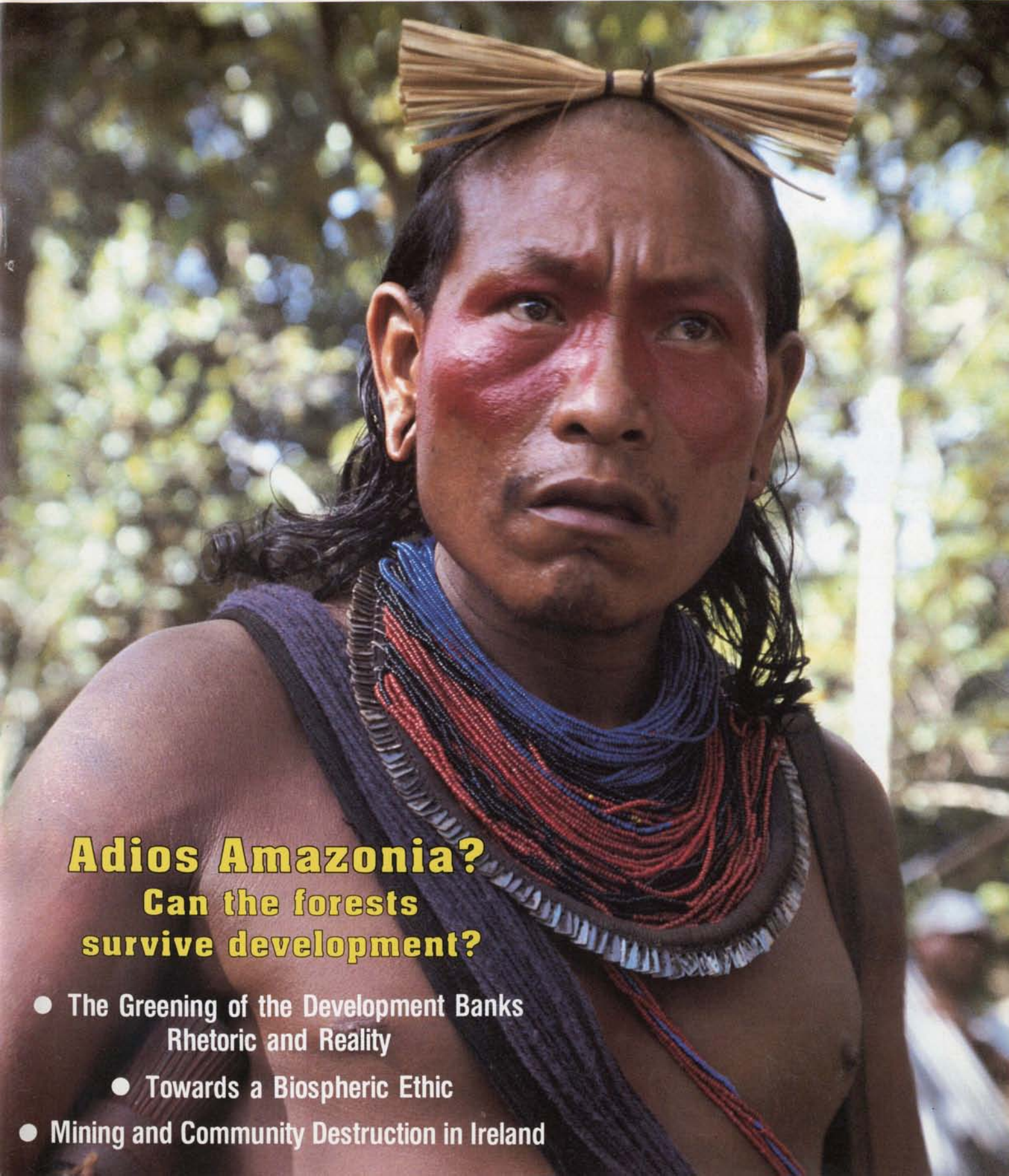


The Ecologist

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A portrait of a man, likely from an indigenous tribe, with a bow-shaped headband made of dried reeds or grass. He has red body paint on his face and is wearing a necklace made of many strands of blue and red beads. He is looking upwards with a serious expression. The background is a blurred forest.

Adios Amazonia? Can the forests survive development?

- The Greening of the Development Banks
Rhetoric and Reality
- Towards a Biospheric Ethic
- Mining and Community Destruction in Ireland

EQUADOR'S DEBT CRISIS THREATENS TROPICAL FORESTS

ABANDONED BY DEVELOPMENT BANK



The valley of Rio Mazan in the Andes of southern Ecuador, contains a unique patch of cloud-forest. This area is now a reserve thanks to the efforts of local people who campaigned to save the forest from being logged.

RIO MAZAN PROJECT

This project was formed to fulfil requests from Ecuadorian conservationists to research the forests ecology, and advise on its conservation and use for education. Work began in 1986, and the next year the project produced a management plan for the reserve. The project, now a registered charity, has been asked back to liaise with the authorities to tackle the much larger task of Paute.

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Forest clearance around Cuenca has led to extensive soil erosion thus causing Ecuador's largest hydroelectric dam at Paute to rapidly silt up and inevitably become redundant.

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IMPACT OF NATIONAL DEBT

A loan was arranged from the Inter-American Development Bank specifically for this crisis, but the national debt and rising inflation has caused the bank to consider Ecuador not creditworthy and unexpectedly refused the loan. Unfortunately our Project was to be partly financed by this. We now have to find £40,000

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In 1987, the World Bank announced that in future it would take full account of the environmental impacts of its projects, and withdraw support from those "where safeguards are inadequate". Other multilateral development banks made similar commitments. But the rhetoric has still to be transformed into reality, as a review of the World Bank's current operations in Brazil and India reveals.

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The recent gathering of Indians at Altimira in Brazil to protest against government plans to dam the river Xingu has highlighted the ecological and cultural holocaust now being unleashed on Amazonia. But even if 'sustainable' development projects are adopted, can the forest and its peoples survive in a consumer-driven economy?

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Plans to strip-mine lignite on the shores of Lough Neagh in the North of Ireland are threatening to destroy not only the Lough's tight-knit fishing community but also the local environment. The government agencies and the multinational companies backing the scheme have proved unaccountable and the survival of a sustainable way of life looks set to be sacrificed for short-term gain.

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Modern biologists tend to view the natural world as purposeless, competitive and devoid of morality — a view that contemporary philosophers have used to justify the claim that only *modern* man is an "ethical" animal and that moral progress is only achieved through the domination of nature. It is a view founded on a grossly distorted reading of the natural world, and it must be rejected in favour of a new 'biospheric' ethic.

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Cover Layout: John McIntyre. Photograph: Arthur Tarnowski

Acid Rain and International Trade

Is there anything more that could possibly be said about acid rain? Given the scientific question of its causes and effects, the economic question of the costs of its clean-up and elimination, the political question of who should pay and how much; given the diplomatic question of upwind-downwind nations and their relationships; given the reams of articles and books, the political rhetoric, the diplomatic debates; and given the continuing intransigence of the problem, could there still be something more to add? Could it be that something, anything, has been left out? Indeed there has been.

That which has been completely and totally ignored in the debate should be the most obvious. It is the direct linkage between our daily lives, our consumption habits, our investment decisions, our choices about how we live on a daily basis, and the generation of the precursor gases — sulphur dioxide and, even more directly, the oxides of nitrogen.

New England vs. Midwest

In the United States, the people of New England vociferously decry the outpouring of acid rain precursors from the industrial stacks of the Midwest, the American industrial heartland, which is upwind of New England. And yet, who constitutes the necessary market for the products of this industry, a market without which there could be no such pollution in the first place? Why, it is the New Englanders themselves, among others. Do New Englanders understand that when they drive their cars, make a purchase of an energy-intensive product like plastics, aluminium, synthetic fibres, highly processed food, highly packaged everything, they are directly supporting these pollutant emissions? In fact, they are sending a clear signal to make more, for every purchase is a sign of a dependable market for the very products which cause the pollution in the first place. And do they realize that their *STOP ACID RAIN* bumper stickers, their letters to Congressmen, and their donations to "Stop Acid Rain" environmental campaigns are all negated, are all more than offset by their much more tangible consumer actions and investment decisions? To any audience of New Englanders it could truthfully be said "We are all Midwesterners", for we make possible that which the Midwest gives to us as a by-product of our material wants and needs. And this is a necessary by-product, given the low price we are willing to pay for these material goods, a price which does not include the by-product externalities, and a price which is, therefore, subsidized by the dilution capacity of the environment, a capacity whose limits we are now exceeding.

Canada vs. United States

It is now well known that Canadians are at the receiving end of considerable quantities of acid pollutants from the United States. Their lakes, their vast forests, their buildings and monuments are being damaged by this transnational movement of pollutants, and their response is obviously vocal. And yet most Canadians

enjoy, and want to continue to enjoy, the material fruits of their proximity to, and integration within, the American economy. So much so, in fact, that the Canadian House of Commons has twice in the past few years approved free trade with the United States. There is no question that, if free trade between Canada and the United States works as its proponents hope, it will mean more energy production and consumption in North America than is now the case. More energy production and consumption, on either side of the border, translates into more air pollution and more acid rain. How Canada, an acid-damaged nation and indeed a world leader in the effort to stop acid rain, can justify free trade and, therefore, more energy and material production and consumption in two nations, Canada and the United States, that already have the highest per capita energy consumption on earth, strains logic. And yet, this is precisely what is happening.

Canadians have opted over the years to enjoy the fruits of an extremely high material standard of living, obtainable only by maintaining an economy closely integrated with that of the United States. This is a political decision for Canadians to make, and they have made it. To the extent that Canada is a customer of the United States, it is involved in US pollution generation, some of which flows back across the border into Canada. To the extent that Canada is a supplier to the United States of raw materials and other products to fuel U.S. industry and the U.S. economy (as well as its own), Canada is again a party, and not an innocent one, to that reverse pollution flow. Unfortunately for Canada, it is particularly vulnerable to damage from acid rain due to the nature of its geology. Unfortunately also for Canada, because of the difference in population of the countries and because of the direction of the winds, Canada receives a rather disproportionate share of pollution damage. Hence, she is a logical complainant. But any suggestion that she is an innocent bystander begs the question.

Norway vs. United Kingdom

In recent years, Norway, which receives the bulk of its acidic pollution from the United Kingdom, has discovered that the basic health of many of its people in the far south of the country is at risk due to acid rain and other pollutants. The problem relates to high concentrations of toxic aluminium in the drinking water, aluminium which has been released through acidification into the water from its otherwise normally harmless state in the granite bedrock of that region. As the aluminium enters the human system, it cumulatively builds-up and ultimately damages the human neural system, causing premature senile dementia (Alzheimer's Disease). According to the Central Bureau of Statistics in Oslo, this disease now occurs in higher than normal percentages of the elderly population (over 70 years old) and now afflicts increasing numbers of the not so old (over 50). The impact on the neural systems of infants and other young children can be much more dramatic and even fatal.

Southern Norway lies directly downwind from the United Kingdom's coal fired power plants, pollution sources which are not only under UK government regulation but are wholly owned

and operated by the UK government through the Central Electricity Generating Board. And yet what does the Norwegian government do to protect its people? Virtually nothing beyond rhetoric. Does it complain to Great Britain? Yes, though even such complaint is sometimes tempered by prevailing political circumstances. But does Norway reduce its economic involvement with Great Britain and therefore its own subsidization of the problem? Not at all. Norway continues to fulfil Great Britain's needs for Norwegian products, and herself continues to provide a needed market for British products. And the Norwegian people, individually and collectively, and including those south Norwegians whose health is afflicted by acid pollution, continue to enjoy the economic and material fruits of that trading relationship, and obviously want to continue to do so. The signal they send to Great Britain therefore is "send us more pollution", while their nation's environmentalists demonstrate in London and while their diplomats exchange diplomatic notes. Norway thus is an active participant in its own destruction. These are strong words, but they are supported by clear and obvious evidence. Norwegians have the right to make a collective political decision no longer to be a party to their destruction, but they have not done so, nor is it likely they are close to making such a decision.

Federal Republic Of Germany

Followers of the international acid rain debate are aware of the German Federal Republic's turnabout in the summer of 1982, from its position of pollution exporter, the position of a nation economically dependent on pollution emissions, to the position of a very important complainant, the position of a damaged and vulnerable recipient of acid pollution. Many realize that the dramatic destruction of the Black Forest and other southern German forests were critical in this turnabout. Today, West Germany, along with Canada and the Nordic countries, stand together as leaders among the damaged and suffering complainants in the acid rain debate. They stand arrayed against powerful emitters of pollution: the United States, the United Kingdom, and the eastern European nations, nations much dependent on a continuation of those emissions to maintain their economic status quo.

But Germany, quite aside from its important position in international trade, has its own domestic Achilles heel: its automotive industry, its automobile-autobahn culture, and its love for high speed and power. Critics of the German diplomatic position on acid rain are not slow to point this out. Stricter emission controls are gradually increasing in Germany, but these are not enough. Germans will have to decide between their cars and high speed motorways on the one hand, and their beloved forests on the other. They are not going to be able to continue to have both.

But even assuming that Germany chooses to put her forests before her cars on the domestic front, what of her trade? Germany is one of the most significant, and therefore one of the most vulnerable, trading nations in the world. Would she continue to participate in making possible the high level of pollution emissions in the United Kingdom, in France, in Italy, in the eastern European countries and the other countries to which she exports? As is always true in these cases, Germany cannot act to stop subsidizing other nation's pollution without suffering economic loss in the process. Her economy (as with those of Canada and Norway) would sustain a severe blow, and her citizens would have to tighten their belts. But this may be the only choice.

The Dilemma of the Nation-State and its Security

Which is more important: national sovereignty, or a more materially wealthy economy? And whither national security, whither the nation-state in this process? These are the fundamental questions. And increasingly it appears that a fundamental choice will have to be made. Nay, such a choice is now being made, and it appears that the choice is toward material wealth at the expense of national sovereignty and security.

The protection of the health and welfare of a nation's citizens is a fundamental *raison d'être* of government. If governments cannot ensure this, they lose their reason for existence. And this is precisely what is happening in the arena of international environmental relations.

Increasingly too, we find analogous situations domestically. In Mexico, for example, the Government has proved unable to protect the health (and thus security) of its people from the unhealthy impact of some of the world's severest air pollution. Ditto Greece relative to Athens. Ditto Brazil relative to Sao Paulo. And so on. In these instances, too, as conditions worsen, we are witnessing the loss of government's own *raison d'être*. National security, national sovereignty, are deeply threatened by the now almost universal inability of government to cope with the environmental crisis. Given concern over the greenhouse effect, the ozone layer, deforestation, desertification, and the related spread of ecological disasters, hunger and disease, there appears to be little hope for government, for the entity known as the nation-state, to maintain control, or, for that matter, to survive.

Lifestyle Decisions

Acid rain provides an excellent case example of the international environmental dilemma. Ultimately we cannot stop acid rain or other forms of air pollution without changing our daily lifestyle, our consumption patterns and investment decisions. Through technology, through various economic and political decisions of a conventional nature, we are able to cover over the problem temporarily, to shift its burden to other peoples or other ecosystems, but we are not able to resolve it. Put bluntly, the day we are willing to significantly reduce our per capita energy consumption, whatever the source of that energy, the day we willingly increase human input and reduce capital, the day we work with the natural system rather than against it, is the day we begin to resolve the acid rain dilemma (and most other environmental dilemmas as well). Real resolution of the problem will not begin until that time.

John E. Carroll

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The 'Greening' of the Development Banks: Rhetoric and Reality

by

Bruce M. Rich

Despite the beginnings of major institutional reform in the World Bank, progress in implementing environmental reform in the Multilateral Development Banks has been inadequate. Examples from Brazil and India show that the massive social and environmental disruption which results from the mega-projects which these banks are continuing to fund, does not go away after bureaucratic reshuffles or 'concerned' speeches by top-level bank staff.

The World Bank is the most important by far of the Multilateral Development Banks (MDBs) and has taken the lead among them in admitting that "if the World Bank has been part of the problem in the past, it can and will be a strong force in finding solutions in the future." In May 1987, the president of the Bank, Barber Conable, publicly announced a number of environmental reforms the Bank would undertake: the creation of a new Environmental Department with greatly increased staff, compared with the Bank's old environmental unit; the financing of a number of environmentally beneficial activities, including doubling the Bank's forestry lending; and greater involvement with non-governmental organisations (NGOs).

Environmental Review Units

More environmental staff were urgently required. Formerly, the Bank, with more than 6,000 employees, had an environmental unit with at most five or six employees, only three of whom were involved even part-time, attempting to review more than 300 new projects and hundreds of ongoing ones each year.

To address the problem of environmental review and assessment of projects, the Bank established environmental review units of approximately five professionals each for each of its four operations regions; Latin America, Africa, Asia, and Europe and the Middle East. These environmental assessment units have been given neither the sufficient funding nor the institutional authority to intervene early in projects unless requested to do so by project officers and Bank country directors. These operations staff have little institutional incentive to involve the environmental assessment units, since this involvement can only risk slowing down the processing of projects and loans, which is what advances the careers of the staff, not the environmental quality of the projects.

The new central environment department, with about 28 professional staff, is mainly involved in research and long-term planning and strategy. The work of the department — which includes revamping the Bank's cost/benefit analyses so that they can quantify and incorporate some environmental concerns — could have a longer term impact on the whole nature of the Bank's lending, but so far it appears to have had little tangible effect.

Bruce M. Rich is Senior Attorney with the Environmental Defense Fund (1616 P Street, NW, Washington, DC 20036, USA), and Director of EDF's International Project.

The Carajas Iron Ore Project

World Bank financed infrastructure in the Carajas Iron Ore Project area in eastern Amazonia is being used for charcoal-fired industrial schemes that will devastate a massive area of irreplaceable tropical forest and destroy the societies of its indigenous inhabitants — a flagrant violation of the Bank's loan agreement. The projects, mostly pig-iron smelters, are licensed by a special Interministerial Council and operated by private companies. The projects would not exist without massive tax incentives. Using native tropical forest, treated as having zero value, as the fuel and carbon source, the industry will exhaust the wood supply (and consequently its own economic basis) within twenty years.

The Carajas Iron Ore Project, an iron-mining, railroad and deepwater port development scheme, was approved by the Bank in 1982. Section 3.10 of the Loan Agreement states that "the Borrower shall take all action, as shall be required to ensure that the execution and operation of the Project are carried out with due regard to ecological and environmental factors".

Companhia Vale do Rio Doce

The borrower is Companhia Vale do Rio Doce (CVRD), a public company owned and managed by the Brazilian government. It has in fact carried out environmental research and reclamation of degraded lands in the immediate vicinity of the mine. But the Company has also collaborated in the implementation of the pig iron projects, over the objections of its own environmental superintendent.

In an internal company assessment of the situation, CVRD's environmental superintendent described concisely the environmental effects of the charcoal-fired pig iron projects: "The economic viability of a charcoal-based iron industry in the Carajas Railroad area is dependent on the devastation of the native forests." The first 11 projects alone will require 1.1 million tons of charcoal per year, and this will come from virgin tropical forest. There are now 22 industrial projects using charcoal as fuel approved, and two pig iron projects are now in operation. Many of the indigenous reserves in the project area have large reserves of standing forest and are already partially occupied by desperately poor peasants. The immediate effect of these smelters will be the destruction or radical degradation of the Indian lands, as

*"If the World Bank has been part of the problem in the past, it can
and will be a strong force in finding solutions in the future."*

*Barber Conable,
President, World Bank.*

well as other remaining forest reserves, as an army of small scale charcoal producers, desperate for income, razes the forest.

The Bank required a Special Project to guarantee indigenous land rights, and to provide health and other assistance to the 10,000 Indians in 23 groups in the project area. While many of the areas have some form of legal protection, the full process of legally demarcating the areas is complete in only 12 of the Indian areas. This minimal legal step should have been a precondition to protect Indian land rights and the well-being of the communities. Delays of this type are purely a matter of political will; the Special Project allocated \$13.6 million for land demarcation, health assistance, and other actions. The Bank's own consultants point out that very little of this money has been spent on land demarcation (not more than 15 per cent), and that much of the expenditure has been on infrastructure of questionable need for the National Indian Foundation (FUNAI).

Flagrant Violation of Contract

Companhia Vale do Rio Doce has a monopoly on the iron ore in the region, and also owns the railroad that the pig iron projects will use. The company is in flagrant violation of its contract with the Bank in its co-operation with these projects. It is apparent in the environmental superintendent's report that CVRD can refuse to be involved with them since this is just the course of action he recommends.

In August 1987, the Environmental Defense Fund and 29 other environmental and indigenous rights organisations from around the world, including ten Brazilian organisations, sent a letter detailing these concerns to Barber Conable, president of the World Bank. The Bank's reply expressed concern for the problems, but suggested that the Bank had no responsibility or influence over the pig iron projects, since these are licensed through the Greater Carajas Program (see *The Ecologist*, Vol. 17, Nos. 2/3 and Nicholas Hildyard in this issue), which the Bank has not financed. This misrepresents the Bank's role in the regional development process. The Carajas Iron Ore Project constructed the basic infrastructure — the mine, the iron ore railroad, and the deep water port — for the process of devastation that has followed. While the Bank's direct contribution was only \$304.6 million (the total project cost more than \$4 billion), the Bank required as a loan condition, and helped to negotiate, co-financing from other international and national agencies and private banks for the remaining funds. The Greater Carajas Project, and the process of environmental destruction it has unleashed, rests squarely on the base built by the World Bank — the Carajas Iron Ore Project. The present disastrous situation would not exist without the World Bank's participation. Since the Bank has already disbursed its funds, it must use its influence through new loans and its ongoing policy dialogue to ensure that the unfulfilled conditions of the Carajas Iron Ore Project are met.

Polonoroeste: The Scandal of FUNAI

One point that emerges very clearly from the Bank's experience in the Carajas Project, and elsewhere, is that the attempts to strengthen the National Indian Foundation, the agency responsible for protecting the rights and welfare of Brazil's Indians, have not succeeded. It is therefore disturbing that proposed Bank loans which would have massive effects on indigenous populations, do not address this problem directly. Under present conditions there is not the slightest possibility of FUNAI effectively protecting the interests of indigenous populations affected by developing projects, or carrying out measures to mitigate the impacts of such projects.

The World Bank called for the institutional strengthening of FUNAI at the outset of the Polonoroeste programme in 1981, but has had very limited success in its efforts to ensure that the terms of its loan agreement relating to indigenous land protection were carried out. Eight of 45 recognized Indian areas in the Polonoroeste area have now been fully documented as legally protected Indian areas.¹ Such legal documentation is a minimal precondition to protection of Indian areas, and not in itself sufficient to defend these lands from predatory exploitation and resource destruction. A 1987 World Bank report on the indigenous people's situation in Polonoroeste, leaked to the press, summed up current conditions: "The security and health of the Indians in the area of influence of Polonoroeste are seriously threatened, since the agency responsible for defending their interests seems unequipped to deal with the indigenous reality."² The report noted the presence of illegal loggers on five indigenous reserves and an illegal gold mine on one. "The administrators of the indigenous areas, the agents responsible for FUNAI posts, and at times the Indians themselves, make agreements contrary to existing regulations, permitting the extraction of wood, gold, and the construction of roads and other activities damaging to the well-being of the Indians."³ The report goes on to criticize the administrative disorganisation of FUNAI, with particular emphasis on the "total lack of control or efficiency in the health services in the indigenous areas", citing "constant epidemics of tuberculosis, measles, and malaria, without due medical attention, which is the exclusive responsibility of FUNAI."

Corruption and Logging Contracts

This scandalous situation represents not a local irregularity, but the administrative character of the agency on the national level. On November 11, 1987, the Federal Accounting Tribunal, a Brazilian federal auditing agency, instituted a formal investigation of contracts for logging on Indian lands signed between logging firms and the president of FUNAI. A previous investigation of misappropriation of funds was already underway. The head of the Tribunal, Minister Adhemar Ghisi, stated that FUNAI's be-

haviour, "with respect to the budget and finance questions is uncontrollable and contrary to the simplest principles of self-control and respect for the law."⁴ In addition to the Tribunal's investigations, criminal investigation of charges of extortion were initiated by the Attorney General. The President of FUNAI publicly admits that he has signed contracts for logging on Indian lands, claiming that the agency is attempting to control a situation that already exists and to ensure that the Indians get a fair price for the timber. However, the contracts are signed without public bidding, often in exchange for the construction of roads, houses, airstrips and other works which it is the responsibility of the agency to provide,⁵ and signed without consulting the Forestry Institute (IBDF) in order that a resource management plan for logging be approved, as is required by law. In one case, FUNAI signed a contract with a logging firm that had been fined by IBDF for illegally operating in a joint Indian reserve and National Park, in effect giving back timber that IBDF had confiscated.⁶ The value of the wood being removed often vastly exceeds the cost of the works given in exchange.⁷ This may be explained by the charge in the extortion case now pending of under-the-table payments to FUNAI in exchange for the nominal legalisation of illegal logging operations.

Actions Contradicting Rhetoric

With the evidence above of the total incompetency of FUNAI and the agencies charged with implementing the environmental conditions of previous Bank loans, it would run directly counter to the Bank's stated intention to improve the environmental quality of its operations for it to continue to approve mega-loans

on the strength of good intentions and claims that problems will be resolved in the future. Yet it is continuing to do so.

WORLD BANK PROJECTS IN INDIA

Singrauli

The World Bank has so far lent \$850 million in four separate loans for construction of the Singrauli super-thermal coal-fired electric generating plant, for the adjacent Dudhichua coal mine, and for electricity transmission lines. The project area lies on the border of Madhya Pradesh and Uttar Pradesh, about 80 miles south of Varanasi (Benares). The Bank financed power plant and coal mine are part of a much larger energy development programme in the region which is to become India's energy capital. Eleven open-pit coal mines and four super coal-fired electric generating plants have been developed besides the ones financed by the Bank. Numerous foreign donors have participated in financing development in Singrauli, but the Bank, as is not unusual in India, is the largest and lead donor.

Two to three hundred thousand rural poor have been subject to forced relocation up to five times in 25 years, each time with little or no compensation. Mostly tribals at the fringes of Indian society, their livelihood was the land, which has now been totally destroyed and resembles scenes out of the lower circles of Dante's inferno. Huge amounts of dust and air and water pollution have created tremendous public health problems. Tuberculosis is rampant, potable water supplies have been destroyed, and chloroquine-resistant malaria afflicts the area.



The Carajas iron ore project. Much of the infrastructure for the project was financed by the World Bank and is now being used to service charcoal-fired pig iron smelters in the area, in flagrant violation of the Bank's loan agreement. The smelters are devastating an area the size of Wisconsin of pristine and irreplaceable rainforest, and displacing several indigenous groups. (Photo: Manchete)

Their agricultural subsistence destroyed, over 70,000 of the people in the area are employed as contract labourers in the coal mines, construction sites and power plants. Many live in unspeakable hovels and shacks on the edges of the huge infrastructure projects, including hovels actually *inside* the open-pit coal mines.

The forced relocation caused by the World Bank financed power plant and coal mine, and the appalling environmental and public health conditions to which these and other oustees are subjected, have been completely ignored by the Bank in its planning and implementation of these projects. The Bank-financed projects which are being constructed by thousands of contract labourers working under the most appalling health and labour conditions, have forcibly displaced about 23,000 people. These are in effect 'development refugees'.

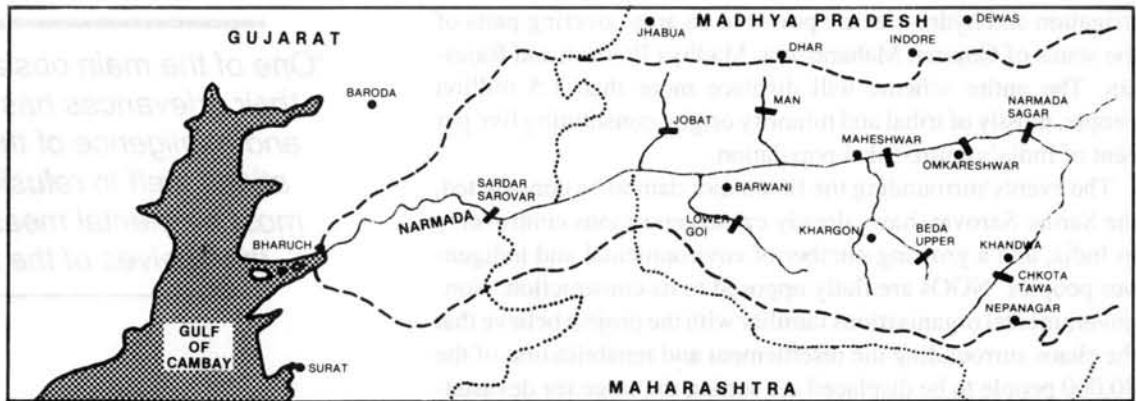
Last year the Environmental Defense Fund prepared extensive dossiers on this situation, and 48 groups from around the world, including 22 leading Indian environmental and social organisations, called upon the Bank to remedy a decade of negligence in its dealings with the people directly displaced by its Singrauli projects. Specifically, the groups pleaded with the Bank to undertake an emergency rehabilitation plan for the displaced people, as well as an emergency environmental protection plan to address coal, ash and dust pollution, deforestation and soil erosion caused by the Bank-financed power plant and coal mine. They underscored the urgent need of the Bank to initiate immediately contracts and discussions with local community and social action organisations in the area representing the displaced people.

Massive Protest

The Bank finally sent a mission to the area in February 1988 which somehow managed to avoid seeing any representatives of the Singrauli oustees, in spite of the fact that only several weeks before 15,000 of them had staged a massive protest in Singrauli, protesting against the conditions to which they had been reduced by the energy projects.

After a delay of four months in answering the environmental groups and individuals (including a former Indian minister of the environment and the chairman of India's National Committee for Environmental Appraisal of Thermal Power Plants), the Bank sent a response which can only be described as a cover up and an insult to the suffering of the Singrauli oustees. While admitting that at least 14,000 people had been forcibly displaced by the Singrauli power plant and Dudhichua coal mine, the Bank refused to consider any new measures to address the appalling problems in the area.

To quote from the Bank's letter to 48 groups from 11 countries around the world: "The idea of a longer term plan for the region to address social and environmental problems, and which external donors could perhaps support, is intriguing. Have you discussed this with the appropriate Government authorities?" In fact not only have representatives of the Indian groups that



Existing and planned dams in the lower Narmada basin.

signed the letter tried to discuss these matters with Government authorities, they also have staged protests involving thousands of people. One of the main obstacles to the redress of their grievances has been the complicity and negligence of the Bank's India operations staff in refusing to undertake the most elemental measures even to inform themselves of the facts in Singrauli.

Bad Faith or Total Incompetence?

Rather than take any actions to remedy the situation, or contact any of the representatives of the local people who have suffered so intensely from its negligence, the Bank is going ahead with an environmental assessment — eleven years after it began its \$850 million investment in the area — the terms of reference of which are deficient, and which will be conducted by France's state electricity utility, Electricité de France. The dossiers and letter submitted by US and Indian citizens explicitly protested against the inadequacy of the terms of reference of this assessment, and protested as scandalous the lack of a major role for Indian community and environmental groups that have been working in the area and with the local population for years. The Bank's response was to change nothing in the terms of reference and, having failed to contact a single individual or organisation concerned with the fate of the 23,000 oustees and the environment in the area, to claim that a provision to include paid consultants from Indian firms could be interpreted as providing for community participation and involvement.

In short, the Bank's record in handling the problems at Singrauli is a shocking indictment of either bad faith or total incompetence in addressing the most basic environmental and human rights concerns.

To make the situation even more worrying the Bank is currently financing at least 11 other giant, coal-fired thermal generating plants in India and similar problems are occurring in most of these projects. The World Bank appears to be totally oblivious to what is happening, especially as regards the forced resettlement of the tens of thousands of rural poor these projects are displacing.

Narmada Valley Dams

The Sardar Sarovar and the Narmada Sagar Dams on the Narmada River (*see The Ecologist*, Vol. 17, Nos. 2/3) will together displace 150,000 people as part of a massive scheme involving the construction of 30 major dams, 135 medium size dams, and over 3,000 small dams over the next 40 to 50 years to provide

irrigation and hydro-electric power to an area covering parts of the states of Gujarat, Maharashtra, Madhya Pradesh and Rajasthan. The entire scheme will displace more than 1.5 million people, mostly of tribal and minority origin, constituting five per cent of India's entire tribal population.

The events surrounding the first major dam to be constructed, the Sardar Sarovar, have already caused enormous controversy in India, and a growing number of environmental and indigenous peoples' NGOs are flatly opposed to its construction. Non-governmental organisations familiar with the project believe that the chaos surrounding the resettlement and rehabilitation of the 80,000 people to be displaced are setting the stage for devastating environmental and social impacts in the Narmada Valley.

In 1985, the World Bank approved \$450 million in loans for Sardar Sarovar in spite of the fact that India's Department of Environment and Forests had not granted an environmental clearance because crucial studies on the dam had not been completed. These crucial studies — which have yet to be completed even today — include plans for the treatment and management of the catchment area, development of the command area, compensatory afforestation, and studies of the flora and fauna and the public health impacts of the dam. In June 1987, under great political pressure, the Government of India granted the environmental clearance for Sardar Sarovar and Narmada Sagar, the next dam to be constructed; the clearance even stated that the studies will not be completed until 1989. The Bank has done nothing to promote timely completion of the studies. The Bank's own environmental assessment in its appraisal of Sardar Sarovar, failed to take into account the substantial ecological stress that the movement of displaced people into areas already suffering from deforestation, sheet erosion, and other environmental degradation, would cause.

Negligence and Disorganisation

The Sardar Sarovar dam will flood a total of 289 villages; 234 in Madhya Pradesh, 36 in Maharashtra and 19 in Gujarat. Over the last few years, resettlement and rehabilitation plans for people to be displaced have been handled with such negligence and disorganisation by the Bank and the three state governments involved (Gujarat, Maharashtra and Madhya Pradesh) that NGOs in India now wonder whether resettlement can ever be properly executed. A combination of factors — lack of availability of land, lack of a common policy for all three states, little or no involvement of local oustee communities in the resettlement plans, and several violations of the World Bank/Government of India loan agreement — have led to recent mass demonstrations of thousands of oustees at the dam site. Additionally, a petition has been filed on behalf of the oustees in the Supreme Court of India for an injunction to halt the dam's construction.

Unfair Treatment of Ousteas

The Environmental Defense Fund testified to the Subcommittee on Foreign Operations in 1987 on the Sardar Sarovar, since when there have been several new developments concerning land availability and land grants. Resettlement and rehabilitation of the oustees is governed by the World Bank/Government of India Loan Agreement and the Narmada Water Disputes Tribunal

"One of the main obstacles to the redress of their grievances has been the complicity and negligence of the Bank's India operations staff in refusing to undertake the most elemental measures even to inform themselves of the facts in Singrauli."

Award. However, many of the principles and conditions of these two documents are very general, and consequently each state involved has developed its own policy on resettlement, a situation that has resulted in the inequitable treatment of oustees. An example of this is the treatment of oustees who have been cultivating land without legal title (encroacher oustees). After considerable public pressure, Gujarat state announced in a December 1987 resolution that encroacher oustees who have been cultivating government or Forest Department land are now entitled to two hectares of land as well as payments to compensate for the difference between the land they now cultivate and the new land. The other two states affected by Sardar Sarovar, Maharashtra and Madhya Pradesh, have yet even to announce satisfactory resolutions regarding encroacher oustees or landless oustees. This is no small matter, since the majority of the oustees, 60,000, reside in those two states.

Since a resolution by the Gujarat Government in 1985, it has been understood among NGOs in Gujarat that each oustee 18 years or older with legal title to their land was entitled to a minimum of two hectares of new land when he or she would be resettled. Unfortunately, in 1988 state officials in Gujarat announced that the offer of two hectares of land applied only to each landholding rather than to each adult oustee. This is totally unsatisfactory as there are several families attached to each landholding. This statement represents a serious setback in negotiations between NGOs and the state of Gujarat, and NGOs are now doubtful that the more progressive resolutions of December 1987 will ever be implemented. This recent setback is also a violation of the World Bank loan agreement which states that each oustee with legal title shall be entitled to at least two hectares of land.

Incorrect Data On Available Land

NGOs working in the region have also questioned whether enough land is actually available for resettlement. According to NGOs in Gujarat, the government's claim of availability of land has proved to be "illusory", because recent NGO inspections in the Vadodara and Bharuch districts revealed that initial data on available land was incorrect. In Maharashtra, even the government has reached the conclusion that no land for resettlement is available except for denuded forest land, which the Forest Department has not agreed to release. The fact that the land has not been released is another violation of the World Bank loan agreement. In Madhya Pradesh, not only does the land for the oustees remain to be identified, but the initial step of determining the number of oustees has not even occurred. Recently, Mr S. C. Verma, the head of the Narmada Valley Development Authority in Madhya Pradesh resigned, publicly stating that he doubted that the government would ever be able to properly resettle and rehabilitate the oustees. It is troubling that Madhya Pradesh, the

"Are We Animals To Be Left To Drown?"

In four visits to the villages which will be submerged by the Sardar Sarovar dam in Madhya Pradesh, the New Delhi-based Multiple Action Research Group (MARG) has found that the villagers know very little about the dam and their forthcoming displacement and rehabilitation.

Although stone markers indicating the level of submergence had been erected five to ten years ago, no one had explained their meaning to the villagers. MARG did not meet anyone in the Narmada Valley who had seen or had had read to them a public notice concerning the dam, despite the fact that Section 4 of the Land Acquisition Act 1894 (and its successor 1984) requires that the occupier be given a notice that his land is likely to be used for a public purpose, and

only then can surveying and other field-work begin. Information about the dam has been given only when submergence is imminent.

The quality and quantity of information given to the villagers has varied considerably from village to village. Some are ill-informed, some misinformed, and no one seems to know the full extent of their rights. Some have been told to go to Gujarat to get replacement land, although they are entitled to land in Madhya Pradesh. Many know that they can get five acres of land but not that this is the bare minimum and that a farmer who has more than five acres is entitled to as much land as he loses, subject to ceiling laws. The oustees are largely ignorant of the right of an 18 year old son to get a basic five acres.

Six forest villages have been found to have been totally omitted from the rehabilitation lists even though they were shown on the submergence maps. Only one of these villages had any information about the submergence, and this only because some civil engineers had camped in their village while surveying the land. One of the forest villagers asked the MARG team: "Are we animals to be left to drown?"

The Multiple Action Research Group note in their report that in this, as in so many other 'development' projects, there is no attempt to educate people for a new way of life, although the project is destroying their old life. The skills that are useful in the forest are more or less useless in the town.

one state which has lagged far behind in resettlement and rehabilitation plans for oustees at Sardar Sarovar, has now come up with a "model plan" for resettlement and rehabilitation of the oustees of Narmada Sagar, the next major dam, and is pushing for Bank approval of the dam this year.

The resettlement and rehabilitation problems at Sardar Sarovar are compounded by the fact that government officials do not involve or consult local communities in the preparation of plans for their displacement. This is a breach of the general principles in the World Bank loan agreement. One NGO, the Multiple Action Research Group, has documented the extent of this problem with a series of reports based on visits to 55 villages in Madhya Pradesh over the last few years (*see Box*). Deprived of even the most basic information on their impending displacement, 4,000 oustees from all three states resorted to protesting at the dam site on January 30th, 1988. It was only after this public protest that the Narmada Control Authority agreed to meet with NGOs to discuss 38 demands concerning their resettlement, which they had submitted in November 1987.

No Formal Communication

Some World Bank staff must be given credit for making efforts to meet with NGOs representing the oustees while they were in the Narmada Valley in 1987. But the NGOs have received very little follow up to those meetings, and they often wonder whether their complaints are even taken seriously. As one NGO representative stated in a recent letter to four World Bank Executive Directors, "The World Bank missions keep visiting India...we keep meeting them whenever possible to give them feedback on the latest field situation. We can never know, however, what is finally concluded and reported by them to the Bank and to all of you...there is never a formal two-way communication that would make a difference."

Independent monitoring and evaluation units on resettlement and rehabilitation which were supposed to be set up for all three states as a condition of the loan agreement have not been fully operating. Only the monitoring unit for Gujarat has been properly established and has put out a draft report. Moreover, NGOs have expressed concern that this monitoring unit is not totally

free in making out its reports, because a draft report must be sent to the Government of Gujarat for approval and modification before it is sent to the Bank.

Shortages of Fuelwood, Water and Land

The oustees in the villages that have been resettled to date — eight from Gujarat and one from Maharashtra — face serious rehabilitation problems such as water and fuelwood shortages, and inadequate land for cattle and farming. NGOs have reported that some Maharashtra oustees who have been resettled in Gujarat have resorted to returning to their old land to collect fuelwood and fodder. Other oustees have received land which was encumbered with debts; still others have been resettled more than once due to the re-acquisition of their allotted land for a canal stemming from Sardar Sarovar. A few of the village communities have disintegrated completely because they were not resettled as a unit.

In 1987, the Department of Forests and Environment calculated the costs of the forests to be submerged by Sardar Sarovar and Narmada Sagar at billions of dollars but this cost was not included in the original cost benefit analysis. The cost of public health measures and the cost of preventing water logging and salinity were also excluded. Other NGOs have cited exaggerated benefits of the dam such as the projected crop yields for rice, wheat, cotton and tobacco in the command area of Sardar Sarovar which are much higher than those achieved anywhere else in India. Moreover, since 1984 there has been a massive escalation of project costs — from \$2 billion in 1984 to \$8 billion in 1987 — which renders the original cost/benefit analysis obsolete.

Cost/Benefit Reappraisal

Under pressure from NGOs, the World Bank's Senior Vice-President for Operations, Mr. Moeen Qureshi, visited India in October 1988 and met with representatives from the government and NGOs. He assured the NGOs that he intended to follow through with their requests, and in November the Bank's India

division staff confirmed that continued funding for Sardar Sarovar is now conditional on substantial improvement of the resettlement programme.

The Bank has also announced that it will reappraise the cost/benefit analysis of Sardar Sarovar during the first half of 1989, and, as a result of the difficulties experienced over this dam, it has delayed its appraisal and decision to grant a \$350 million loan for the Narmada Sagar until early 1990. But, encouraging as this may be, even further reviews cannot justify the World Bank's continued involvement in the construction of Sardar Sarovar and the forced resettlement of 80,000 people. The Bank, in collaboration with the Indian Government, should instead actively research alternative schemes involving smaller scale dams and energy efficiency improvements.

Social Forestry in India

The Karnataka social forestry project (see *The Ecologist* Vol. 17 Nos. 4/5) has failed to fulfil the Bank's stated objectives of providing fuel, fodder, fruit and minor forest products to the rural poor and landless. The announcement in 1987 that the World Bank intends to double its annual level of forestry lending indicates the special need for scrutiny of Bank funded social forestry projects.

Last August, the Environmental Defense Fund collaborated with 18 Indian environmental organisations in submitting a letter and critique of social forestry in Karnataka to World Bank President Barber Conable. While the Bank agreed with some of the NGO criticisms in its response, it did not express a commitment to making any major changes in the project. Since then, the EDF has conducted its own field investigations in Karnataka and found that the project is basically unchanged. If this project is going to meet its objectives there must be substantial reforms to allow for more direct involvement of the rural poor and landless in the implementation of the project. The Bank should initiate pilot projects where wastelands are leased to groups of the poor and tree tenure programmes for the poor are established. These types of projects have already proven successful in other parts of India.

Plantations in Gujarat

Another World Bank financed forestry project with similar aims where the Environmental Defense Fund and DISHA, an Indian grassroots social organisation, conducted a recent field investigation, is in the state of Gujarat. Village plantations are the main components in the project that are supposed to benefit the poor and landless. But profits or fuelwood from the plantations rarely reach the poor. The woodlots are controlled by the village panchayats (councils) which are dominated by the richer farmers and property owners. The result is that the tribals not only have no access to the village plantations, but are also fined if they are caught collecting wood or if their cattle are found grazing in the plantations. NGOs working among the tribals of Gujarat have found that villagers who have been cultivating wasteland or village common land often no longer have access to the land once it is taken by the Forest Department for eucalyptus plantations.

The tribals in northeast Gujarat depend on the collection of minor forest produce on Forest Department land, wastelands and village common lands, as one of their main sources of income.

According to DISHA surveys, the forestry sector generates nearly 22 million person-days of employment opportunities for tribals and landless labourers, and around 100,000 families are engaged in collection of minor forest produce in northeast Gujarat.

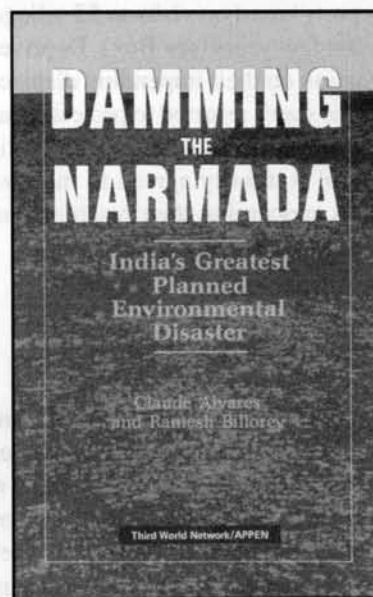
Increasingly, the promotion of eucalyptus in these areas has made the land less accessible for forest produce collection and consequently has reduced the income of tribals. DISHA has discovered that tribal labourers in Forest Department/World Bank nurseries receive less than the minimum wage for their work.

In light of the serious social and environmental impacts of these Bank forestry projects, the Bank needs to re-evaluate and address the problems in existing projects, before it embarks on increased forestry lending. *Above all, the Bank needs to ensure that local communities are involved in all aspects of social forestry project planning and implementation.*

OPERATIONAL REFORMS NEEDED BY THE MDBs

The problems noted above are neither "historical" nor "anecdotal", as some World Bank officials have stated, implying that environmental and social negligence was either only a problem in the past, or occurred only in isolated incidents which could not be cited to characterize the Bank's environmental performance as a whole. On the contrary, the problems are occurring now, are systematic, and are a direct consequence of the World Bank's lack of action and effectiveness in implementing its already existing environmental policies.

In both the World Bank and the regional Multilateral Development Banks, the positive examples of environmental reform



In this comprehensive study, the authors, who had access to official documents, expose the large-scale manipulation and fraud that led to approval of the project.

Includes exclusive interviews with top officials of the Narmada Valley Development Authority.

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"The lending priorities of the banks have hardly changed at all, and they continue to finance whole categories of projects which are both environmentally destructive and economically inefficient."

are noteworthy only as exceptions to what is still a general rule of environmental negligence. More and more evidence is being uncovered of poorly planned, tragically misguided projects, which are destroying the natural resource base on which the rural poor in developing countries depend for their physical survival. In project after project, the MDBs' institutional weaknesses and lack of commitment of priority and resources to ecological matters is destroying the biological capital of the Third World. And it is especially the poorest of the poor, the most marginalised populations who are most cruelly affected. In a number of MDB projects gross ecological negligence is reducing rural populations from a subsistence economy to absolute destitution.

The one MDB that so far has made a significant institution-wide commitment of resources and staff to improving the environmental review of projects — the World Bank — has set up the units that would review Bank projects in such a way that they are hamstrung by their lack of resources and institutional authority. Five years after the first hearings on the environmental performance of the MDBs in Congress, we have yet to see significant improvement in the environmental quality of the lending programmes of the regional Multilateral Development Banks (with the exceptions of two Inter-American Development Bank projects, the Porto Velho-Rio Branco road project, which was resurrected after a temporary suspension of the loan when the minimum environmental conditions which had previously been ignored were met, and the Sao Paulo channelisation project which was cancelled after protests from local citizens groups). To what extent this situation is due to bad faith, and to what extent it is due to bureaucratic inertia and incompetence is a matter for debate.

Reform Priorities

A first priority for MDBs should be a more vigorous implementation of the major environmental reforms set out in the MDB environmental legislation of the past three years: increased environmental staffing, systematic involvement of local community groups, NGOs, and other organisations representing populations affected by MDB projects, and a shift in lending priorities so that a much greater proportion of environmentally beneficial projects are financed.

The regional MDBs need to increase greatly their environmental staff, and the World Bank needs to empower the expanded staff it has already hired, in particular the four regional environmental assessment units. Although the World Bank and the Inter-American Development Bank have made promising rhetorical commitments to greater involvement of local non-government organisations in their project planning and implementation, their actual practice continues to contradict their rhetoric. The lending priorities of the banks have hardly changed at all, and they continue to finance whole categories of projects which are both environmentally destructive and economically inefficient.

The US Executive Directors need to continue, and strengthen their efforts to promote these environmental reforms in the MDBs. But the most important need is for Executive Directors representing other nations, particularly Third World borrowing countries, to press for reform. Although the MDB environmental legislation has mandated that the Treasury and State Departments "conduct bilateral and multilateral discussions with other members of the MDBs to further strengthen the environmental performance of each bank"⁸ and conduct "diplomatic and other initiatives" to the same end over the past two years,⁹ both Treasury and State have been sluggish in undertaking such discussions and initiatives. The Congress could facilitate this by giving both the Treasury and State Departments stronger directives to undertake such international and diplomatic initiatives.

Insufficient Information For Executive Boards

A disturbing fact is that the managements of the MDBs are often not supplying their Executive Boards with sufficient information on the environmental and social aspects of loans so that they can be evaluated on an informal basis. Although most MBD project documents now contain a sentence or paragraph on the environmental consequences of proposed projects, the inclusion of such a sentence or paragraph is still done too often as a formality that conveys no information based on actual investigation of potential environmental impacts. The Executive Directors of the MDBs receive the loan documents and project appraisal reports only two weeks prior to a vote, which, even if they had the necessary staff and resources to review them, is not sufficient for most member countries to make an informed decision. This would require sending the loan documents back to their respective countries for review and comment by agencies with technical expertise — logistically highly impractical if not impossible in a two week period.

Excerpts from the minutes of the Meeting of the World Bank board of Executive Directors of June 19, 1986, show the extent of the lack of environmental information in MBD loan decisions. At this meeting two Executive Directors of the World Bank, including the US Executive Director, voted against approval of the \$500 million second power sector loan to Brazil on environmental grounds. Another Executive Director suggested that a decision on the loan be postponed, since further discussion and information was needed. To quote from paragraph 67 of the Board Minutes for that date:

"A number of speakers (Executive Directors) expressed concern about the potential environmental impacts and potential resettlement problems of the subprojects which would be financed by this loan. Some of them cited pressure on the Authorities to oppose the loan from environmental groups who appeared to have details of the subprojects, *many of which were not discussed in the President's Report*" (emphasis added).

And paragraph 87:

"Another speaker (Executive Director) asked that man-

agement provide information on the outcomes of the other projects (financed by the loan), as well as Itaparica. He also stressed that the documents presented to the Board did not point out all of the major issues over which the Board and various shareholder Governments would have difficulties with environmental groups. He asked that this be avoided in the future when this kind of project was presented to the Board" (emphasis added).

This shows that the World Bank Executive Directors themselves are concerned about the lack of information on the environmental and social impacts of projects that the Bank's management asks them to approve and underscores the urgent need for the MDBs to prepare environmental reviews or assessments on prospective projects and submit them well in advance to their Executive Boards so that member governments can make informed decisions on proposed loans.

There is a further need within the US government itself to involve technically trained staff from the Environmental Protection Agency in the review of MDB project documents. Currently, there are two Treasury Department officials who attempt to evaluate MDB projects and policies for environmental and socio-cultural impacts. They receive some assistance from USAID from the reports of the "early warning system" through which AID missions attempt at an early stage to identify MDB projects that may have serious environmental implications. In many instances, however, the Treasury Department officials are already overwhelmed by both the quantity of potential projects they must deal with and a lack of technical environmental expertise in some areas to evaluate projects. The active involvement

and co-ordination of Environmental Protection Agency staff is the single most important step that could now be taken to enhance the environmental review capacity of the US in Multilateral Development Bank loan decisions.

Progress in greening the MDBs has been unacceptably slow. It will require continued vigilance and pressure from NGOs to see the needed environmental reforms carried out. Rhetoric is not enough. What is needed now is clear evidence of a change in policy.

This article is an edited version of a statement by Bruce Rich on behalf of the Environmental Defense Fund and Friends of the Earth US before the United States Senate Committee on Appropriations, Subcommittee on Foreign Operations on June 14, 1988.

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• **How you can help:** Write to the World Bank and insist that the recommendations in this article are acted upon. Keep writing until there are major policy changes.

• Barber Conable, *The World Bank, Headquarters, Washington DC 20433, USA.*

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Thank You.



The Indians gathering at Altimira perform a welcoming dance. But they have warned that construction of a series of dams on the Xingu will effectively mean war. (Photo: N. Hildyard)

Adios Amazonia?

A Report from the Altimira Gathering

*The destruction of Amazonia and its peoples recently received international coverage when Indians and environmentalists from all over Brazil gathered at Altimira to protest against the massive Xingu Hydroelectric Project. **Nicholas Hildyard** reports from the gathering on the devastation of the forests, and argues that the forces of destruction cannot be halted within a market economy geared to satisfying increased consumer demand*

The Indians sat motionless on the concrete floor, as they had done for almost two hours, listening patiently as José Antonio Muniz Lopes, the chief engineer of Brazil's electricity conglomerate Eletronorte, smoothly outlined his case for building a massive hydroelectric scheme on the Xingu river. "The dams will be in your interests. Nor is it certain that they will even go ahead: they are still very much in the planning stage. We still have many studies to complete, and only when they are finished will we make the decision whether or not to proceed with the project. But if they do, they will bring progress."

The 600 Indians rose as one, raising their arrows and clubs in protest and chanting their disapproval. A woman, streaked in warpaint, strode to the dais, brandishing a machette and cutting the air to emphasize her points. Just inches away from Muniz, she brought down the machette in a graceful but swift arc, stopping the blade a hair's breadth from his shoulder blade. Muniz sat impassively as she ritually pressed the flat of the blade against his cheeks.

"You are a liar. We don't need electric-

ity. Electricity won't give us food. We need the rivers to flow freely: our future depends on it. We need our forests to hunt and gather in. We don't want your dam. Everything you tell us is a lie."

The tension was palpable. Around the edge of the hall, the small detachment of military police, who had been called in after shots were fired near where the Indians were encamped, fingered their holsters. A few Indian warriors, wary of possible violence, deftly placed their arrows in their bows. For a moment it looked as if the worst was about to happen.

Muniz continued. "The dam project will only flood a small amount of Indian land. At most, 216 people will have to be resettled. It is a small price to pay for the economic benefits which will come to the region."

But the Indians would have none of it. "You say you're conducting exhaustive studies, but you haven't asked us what we think. In ten years time, you might come and ask us our opinion, but in ten years time, there will be no Indians left. All you think about is economics. You don't think

about us." "We are not here for show. We are not just dressed up for the cameras. We don't want this dam and we won't have this dam. You say you'll conduct more studies, but you don't need any more studies. The dam will be a disaster: you only have to look at the others you have built." "The government is out to integrate us. But how will that help us? Look at this town: it's a miserable place. Conditions are terrible, and the people live a miserable life. Is this what you are offering us? Is this progress? Why don't you spend your money to improve conditions here. When will you finally *learn* that your dams don't help anyone but the rich? Why won't you *listen* to us? We have been here for thousands of years. We'll teach you how to live *properly*." "Don't talk to us about relieving our 'poverty'. We are not poor. We are the richest people in Brazil. We are not wretched. We are Indians."

A Gavião chief, himself uprooted by a dam elsewhere in the Amazon, warned that Eletronorte could never be trusted. "They said they would compensate us, but Eletronorte blocked our claim in court. We

have not received one single cruzado. Eletronorte says they have paid us, but they haven't. Don't enter into any agreement with them. You cannot trust them. They say they are only conducting studies. They told us that. But with each study, they sealed our fate. Little by little, they moved in. Then the dam was built."

Muniz shook his head. But there was no doubting the mood of the Indians. "You've chosen to call your dam 'Kararaó'. Do you know what that means in Kayapo? It means 'War'. And war is what you will have if you go ahead with the dam."

The Xingu Dams

The Indians — some 1,000 in all — had gathered at Altimira, a boom town in north-eastern Amazonia, to alert world opinion to the ecological and social devastation that will result from the Xingu hydroelectric project, itself only the first phase of Brazil's ambitious 2010 Plan. They had come from all over Amazonia, some by boat, others by bus, and still others by foot. All told, 36 sub-groups from 26 nations, many of them putting aside ancient differences, were represented in what was the largest ever gathering of Indians in modern times.

Under the 2010 Plan, 136 dams are planned for the whole of Brazil, 68 of them directly affecting Indian lands in the Amazon, and 6 of them on the Xingu or its tributary the Iriri. If all the dams get the go ahead, a minimum of 25,994 square kilometres (km²) — an area one and a quarter times the size of Wales — will be flooded, although some experts argue that the topographical survey work is so inadequate that the total area could reach 250,000 km², equal to an area the size of Great Britain. Much of the land to be flooded in Amazonia is pristine forest, and includes several Pleistocene 'refugia' (areas which survived the last Ice Age), all of which are centres of high biological diversity and species endemism, containing plants and animals that exist nowhere else on earth. Some 500,000 people, the majority of them Indians, squatters, goldminers and poor peasants, will be forcibly removed to make way for the dams. According to the Commissario Pro Indio, a Sao Paulo-based indigenous rights group, 60 per cent of the projects will affect Indian lands. Already 56,000 people are scheduled for resettlement to make way for projects currently under construction.

The Xingu River Basin Hydroelectric Project is one of the more ambitious sched-



Thirty-six Indian sub-groups from twenty-six nations, many of them putting aside ancient differences, were represented in what was the largest ever gathering of Indians in modern times. (Photo: N. Hildyard)

uled under the 2010 Plan. It is intended to tap the exceptional hydroelectric potential of the Xingu and its tributaries. Approximately 70 per cent of that potential lies on the 'Great Bend' of the Xingu, a 170 kilometre stretch between Altimira and Bel Monte, where the river drops some 90 metres in a cascade of rapids. It is here that the first dam, Kararaó (now hastily renamed Bel Monte to appease the Indians), will be built. CNEC, the Brazilian National Consortium of Engineering Consultants, which has undertaken the survey work for Eletronorte, estimates that the dam will flood 615 km², but official predictions of reservoir sizes have been notoriously unreliable — at Tucuruí, on the Tocantins river, for example, the reservoir was expected to cover 1,600 km²; it eventually flooded 2,600 km². The figure for Kararaó has been widely criticized by independent researchers, who put the minimum area of the dam's reservoir at 1,125 km². In addition, further land will be lost to the auxiliary pump stations, the construction roads and to the new shanty towns that will spring up as an expected 50,000 migrant workers converge on Altimira in search of work.

But the destruction caused by Kararaó will be as nothing compared to that caused by Babaquara and the four other dams — Ipixuna, Kokraimoro, and Jarini, all on the Xingu, and Iriri, on the river Iriri — to be built upstream of Altimira. According to the Commissario Pro Indio, Babaquara alone will flood 7,200 km², creating one of the world's largest man-made lakes, al-

though CNEC puts the figure at 4,120 km²: all told, the entire Xingu project will cover an area of at least 18,000 km². Over 400,000 hectares of Indian land will be flooded, affecting 12 tribes — the Arrara, the Koatinemo, the Arawete, the Asurini of the Xingu, the Juruna, the Parakana of Bom Jardim, the Pakaçimba, the Apyterewa, the Xikrin of Bacaja, the Curua, and several Kayapo groups, notably the Kararaó and the Kokraimoro. At least 4,000 Indians will be directly affected, in addition to numerous miners, squatters and small farmers.

Although Eletronorte claims that Babaquara is now being "reconsidered", independent experts, such as Dr. Alan Poole of the Sao Paulo-based Instituto de Eletrotecnica e Energia, are sceptical. Poole points out that without Babaquara, the Kararaó dam would make little sense, since it is a run-of-the river dam and has little storage capacity of its own. It could not therefore be run at full capacity.

Progress for Whom?

For all the social and ecological devastation that the Altimira dams threaten, the local colonists — particularly the shopkeepers and businessmen — are almost universally in favour of the dam. Despite the counter-slogans daubed on the pro-dam billboards ("Dams are ecological AIDS") ("Dams mean Death"), there is no disguising the mood of the town. The belief that the dams will benefit Altimira is deep-rooted and the faith placed in Eletronorte's technological prowess goes hand-in-glove with the frontier spirit of the local population. "Amazonia is Ours" proclaims a banner stretched across the main street. "Energy is Progress" reads another. T-shirts, handed out free (courtesy of the local Mercedes dealer) by MOPRAK, the Movimento Pro Kararaó, sport the same message.

The Monday that the Indians opened their gathering, some 6,000 people turned out for a rally in favour of the dam. The day had been declared a holiday and there was a carnival atmosphere in town. Bands, mounted on floats, rocked to the beat of samba, the demonstrators dancing in their wake. The demonstration snaked its way noisily around the town, the crowd becoming more frenetic as the afternoon wore on, the slogans more raucous, and the carnival atmosphere giving way to sometimes open intolerance. "Kar-ar-aó! Kar-ar-aó! Amazonia e Nostra! Energia e Progresso!" Some are in tears: others punch the air with

their fists. "They certainly know how to put on a show", remarked a news reporter. "It's frightening," replied his colleague. Energy may still be "progress" for the townspeople of Altimira, but conditions at other "dam towns" tell a different story. Certainly, local businesses have profited from the influx of migrant workers to the construction sites, but promises that the dams would bring asphalt roads, schools, hospitals, mains drainage and other basic amenities have proved hollow. At Tucuruí, the town still lacks even the most rudimentary facilities, and most of its population remains condemned to live in ramshackle, unsanitary and squalid shanty towns.

Nor will the bulk of the energy generated by the Altimira complex be available locally. Only one third of the 18,000 MW generated is earmarked for Amazonia: the rest will be sent south via a long-distance transmission line to São Paulo and Rio de Janeiro, and north-east to the Belém area. There the energy will be used to power industries, many of them grossly polluting, manufacturing goods largely for export. It is a story that has been repeated time and again, at dam after dam, in Brazil. Tucuruí, for example, powers a giant aluminium smelter, owned by ALUMAR — a consortium made up of ALCOA and Shell-Billiton. The company is provided electricity at almost one third of the price charged to domestic consumers, and at a rate which covers just one per cent of its generating costs. All told, electricity subsidies to the aluminium industry cost the Brazilian Government some \$3 billion a year.

Industry is the foremost consumer of electricity in Brazil, and the industries which consume the most electricity are also the most polluting — aluminium plants, chrome and silicon works, and copper, lead and zinc foundries. It is precisely these industries that will receive the electricity from the dams planned under the 2010 Plan.

Eletrobras, the government state power company, of which Eletronorte is the North-eastern arm, insists that without the new dams, the country will suffer an "energy crisis". Yet studies by the World Bank and others suggest sufficient generating capacity already exists in Brazil to satisfy the expected rise in demand over the medium term, provided that the energy is used more efficiently. According to a 1986 World Bank report, "Installing more efficient end-use equipment in Brazil during the next 15 years in order to reduce electricity demand by 87 Terawatt-hours



The entire Xingu project will cover an area of at least 18,000 km² (7,000 square miles). Over 400,000 hectares of Indian land will be flooded, affecting 12 tribes. (Photo: A. Tarnowski)

in 2000 could eliminate the need to construct 22 Gigawatts (GW) of generating capacity. This is equal to nearly half of the projected new capacity that must be completed by 2000, in addition to capacity now in place or under construction." The report goes on: "Avoiding constructing 22 GW would save utilities from having to invest at least \$44 billion (in 1985 dollars) in new power supply facilities. The required investment in greater end-use efficiency, on the other hand, is estimated to be under \$10 billion."

Ten billion dollars is the estimated cost of the Altimira dams.

A Record of Broken Promises

Eletronorte acknowledges that considerable ecological and social damage has resulted from the construction of other dams in the Amazon — notably Balbina on the Rio Uatuma (described as "a folly" by the US Director to the World Bank and as a "disaster" by the director of Brazil's own Secretariat for the Environment) and Tucuruí — but insists that it has learned from its past "mistakes" and will correct them at Kararaó and Babaquara. One has to be extremely trusting, however, to take such assurances at their face value — and neither the record of Eletronorte nor that of the Brazilian Government inspires such trust. Indeed, it is a measure of the scant regard shown by the Brazilian authorities towards the environment and tribal rights that the original 2010 Plan scarcely even

discussed the Plan's inevitable social and ecological impact.

The history of Balbina itself provides a suitably cautionary tale. According to the human rights group Survival International, the agencies charged with environmental protection and with overseeing the resettlement of displaced Waimiri-Atroari Indians proved "unable or unwilling to fulfil the commitments they made or indeed their legislative mandates... Until at least April 1987, there was no resettlement plan, the legal measures (demarcation) to protect Indian land had not been taken and the groups had no clear idea of the physical consequences of the dam." Indeed, "the demarcation of Indian land was only agreed after the dam began to be filled — and it has still to be ratified legally. Perhaps inevitably, the resettlement, hurried and virtually unplanned, has resulted in serious social conflicts among the Indians."

Survival International is damning of the company's overall record: "Planning has been *ad hoc* and ill-considered, and resources and staffing inadequate and poorly trained. Indian land rights have been neglected, and essential health measures inadequately provided, while the basic policy has been one of over-hasty and enforced integration, providing little or no time or opportunity for the Indians to comprehend, let alone control, what was happening to them. The result has been economic impoverishment, social disorientation, cultural demise, disease and death."

Window-dressing and questionable intentions are similarly the hallmark of Eletronorte's "environmental mitigation" measures at Balbina, and elsewhere. An animal rescue operation to save flora and fauna from the floodwaters quickly ran out of money and was described by one biologist as "a facade". Scarcely any of the 2,346 km² of forest in the reservoir area was cleared before flooding — this despite the experience of Tucuruí, where the drowning of uncleared forest led to massive eutrophication as the vegetation and trees rotted, resulting in numerous fish kills and the poisoning of water supplies. Although Eletronorte is now conducting studies at Tucuruí to assess the impact of the dam on aquatic life (in order to "correct past mistakes"), scientists working on the project describe the programme as a "sham". Little of the money paid to the private company contracted to complete the research has reached the scientists in the field and Eletronorte appears uninterested in the results.

Nor should that come as a surprise. A

report by the Commissario Pro Indio notes: "Eletronorte is required by law to undertake viability studies which evaluate the impact of projects on the environment and the regional population . . . The influence of such evaluations on decisions related to the project is very limited. In the eyes of Eletronorte, such studies are undertaken exclusively for legal reasons and because the World Bank requires them: at the moment of actual decision making, the studies are not really taken into consideration, and the researchers who conduct them are not even present."

Significantly, that view is endorsed by the World Bank, which, in a 1985 staff appraisal report, commented that the Brazilian electricity utilities pay "only rhetorical attention at higher managerial levels to sociological and environmental variables as reflected in some of the projects at present under construction."

But even if the Brazilian authorities were true to their word, and implemented the widest possible steps to "mitigate" the damage that will be caused by the planned dams, it is extremely questionable whether any measures can ever reduce the social and ecological impacts of large dams to an acceptable level, particularly in the tropics. No measures can ever undo the devastating body-blow that the loss of a homeland, a way of life and an identity delivers to a traditional culture. No animal rescue scheme can conceivably "mitigate" for the loss of a belt of pristine tropical forest, where a single hectare may contain up to 400 trees, every other one a different species, and thousands of insects — diversity which can never be reconstituted, let alone be fully compensated for, by a reforestation programme. No measures can safeguard against the inevitable invasion of waterborne diseases, such as bilharzia and malaria, which accompany the filling of the reservoir. No measures can forestall the impact of reduced silt loads on aquatic life downstream. No measures can prevent the influx of settlers that follows as the dam's access roads (and its reservoir) open up new areas of forest, nor the deforestation that ensues as the settlers clear land to eke out a living. And no measures can stem the climatic changes that such deforestation causes.

And whilst deforestation proceeds unchecked, so erosion increases and the soils of the watershed are washed into the local rivers, bringing the day when the dam's reservoir simply silts up inexorably closer, eventually rendering the dam inoperable. Already, the debris in Balbina's reservoir regularly clogs the dam's turbines, whilst

in China, the Laoying dam suffered such high rates of sedimentation that the dam's reservoir silted up before a single megawatt was produced.

Opening Up Amazonia

Nor will the ecological and social damage caused by the planned dams be limited to the immediate area of the dams themselves. The *2010 Plan* is explicitly intended to *open up* Amazonia to industrial development. Indeed Eletronorte touts Altimira's proximity (at least in Amazonian terms) to sizeable mineral deposits as a major reason for damming the Xingu. According to the company, the Altimira complex will supply "a privileged source of energy . . . for meeting the energy needs which the mineral development of Amazonia, which is only now beginning, will possibly require."

The impact of industrialization is already evident. Brazil currently earns some \$9,000 million from mining operations, many of them in Amazonia. Massive reserves of gold, diamonds, uranium, titanium and tin have all been discovered in the forests — and Brazil is determined to exploit them. In the north-east of Amazonia, the Greater Carajas Project is already opening up one sixth of Brazilian Amazonia to industry and industrialized agriculture (see also *The Ecologist* Vol.17, Nos 2/3 and Bruce Rich in this issue). All told the project occupies 900,000 km², or an area the size of France and Britain com-

bined. The centre piece of the project is the Serra dos Carajas open-cast iron ore mine. Other projects include a bauxite mine capable of producing 8 million tonnes of bauxite a year, and an aluminium smelter that will produce 800,000 tonnes of aluminium and 20,000 tonnes of aluminium oxide a year for sale to Japan. The project is likely to lead to severe water and air pollution, many companies having been enticed into it through promises of less stringent pollution controls. In addition, some 55,000 km² of forest will be cleared to make way for export-oriented plantations and biomass fuel farms. A further 30,000 km² will be given over to ranches. The project as a whole will affect the homelands of 23 tribal groups.

The threat to the forests is severe. Approximately half of the Grande Carajas region (some 450,000 km²) is forest, ranging from true forest to seasonal evergreen forest and open savannah. The immediate threat is from the iron-smelters and charcoal plants being set up along the railway corridor to the sea, and from mining operations in and around the main mineral reserves. One and half million hectares of forest have already been hewn down and burnt to provide charcoal for the project's pig iron furnaces, the annual production of 2.5 million tonnes of pig iron causing the loss of 610,000 hectares of forest a year. Thirteen thousand Indians have been deprived of their land, and the area has now been invaded by a flood of settlers, causing still more devastation. The programme is an ecological and social disaster on a grand



Mining is causing severe social and ecological problems. Clashes with Indians are frequent and mercury pollution widespread. In Rondonia alone gold production increased from 4 kilograms a year in 1974 to 3,600 kg/year in 1984. (Photo: N. Hildyard)

"In the eyes of Eletronorte, environmental and social impact studies are undertaken exclusively for legal reasons and because the World Bank requires them: at the moment of actual decision making, the studies are not really taken into consideration, and the researchers who conduct them are not even present."

scale: any further industrial development in Amazonia would bring nothing less than catastrophe.

The Power Sector Loan

The Brazilian Government had hoped to finance the Altimira dams from a \$1.1 billion loan to Eletrobras, \$500 million of the loan coming from the World Bank and the rest from a consortium of banks (including Citibank, Midlands and Lloyds) under a larger debt rescheduling deal worth \$5.2 billion. The Bank, under pressure from environmental and human rights groups, has now announced that it will not go ahead with the loan and the commercial banks have withdrawn their support. It is a major victory for the NGOs and, hopefully, signals a *real* change in Bank policy. For the Bank's handling of the first power sector loan cast grave doubts on its commitment to "greening" its development aid (see also Bruce Rich in this issue). As planned, the loan would have formed the second half of a billion dollar package to the Brazilian power sector, the first power sector loan (also valued at \$500 million) having been dispersed in 1986. The first loan was only approved after considerable internal opposition: indeed, two executive directors, including the US executive director, voted against the loan specifically on environmental grounds, the first time in the history of the Bank that such action had been taken. Britain's executive director raised several objections to the loan, but nonetheless went ahead and voted for it.

Because the funding was in the form of a lump sum to the power sector, rather than loans to named projects, the World Bank has tried to maintain the fiction that its power sector loans have played no part in funding Amazonian dams. Indeed, in 1988, a senior Bank official told its annual meeting in Berlin that the World Bank "has not financed and does not intend to finance hydro-power projects in the Amazon."

Leaked minutes of a meeting of the Bank's Executive Directors, held in July 1986 to discuss disbursement of the first power sector loan to Brazil, give the lie to

such protestations of innocence. During the discussions, several dam projects (all to be funded with the money from the loan) were discussed by name; they included the Itaparica sub-project, the Jiparana dam in Rondonia (which would flood a proportion of an Indian reservation which the Bank had previously helped establish), the Balbina dam and the Tucuruí dam. The US Executive Director argued forcefully that authorization of the loan was "entirely premature", and that "major environmental questions, to all appearances, were being swept under the rug". The British representative also spoke out against the loan, stressing that "environmental protection components of the project were much too weak and consisted mainly of promises to be fulfilled in the future with very few concrete measures supported by substantive analysis." Nonetheless, the loan went ahead, bailing out several notorious dam projects which the Bank had previously refused to fund, including Tucuruí and Balbina.

By opting to finance amorphous sector loans, the Bank undoubtedly wished to side-step opposition from environmental groups, which had previously been able to oppose funding for dams on a project-by-project basis. It is a strategy that has failed.

In place of the second power sector loan, the Bank has now declared that it is to give an initial loan of about \$400 million to be used strictly for environmental purposes, including funding for a new environmental protection ministry and new procedures for environmental impact assessments. Approximately one quarter of this initial loan is for investments in energy efficiency and conservation. Later this year, two additional loans of about \$300 million each will be made to the power sector for distribution and transmission, and each will include about \$100 million for further investments in efficiency and conservation.

But even the victory over the power sector loan does not mean that the battle is over — and it will never be until the Brazilian Government announces that it is abandoning its plans to open-up Amazonia. Not only does Brazil have an appall-

ing record of implementing environmental protection measures of the sort now being demanded by the Bank, but other loans are in the offing, and the on-off history of funding for other Bank projects around the world, notably the Narmada scheme in India and Indonesia's Transmigration scheme, illustrate how easily a decision made today can be overturned tomorrow. Moreover, in the wings lie the Japanese, keen to invest in Brazil and notoriously indifferent to the environmental consequences of their investments. Recently President Sarney of Brazil requested \$10 billion in "development" loans from Japan: if that money comes through, implementation of the Xingu phase of the 2010 Plan might seem almost inevitable, with or without the World Bank loan. In that event, the prospects for Amazonia and its people would be grim indeed.

The Shape of Things to Come

One need look no further than Altimira and its immediate surroundings to see what the future holds. Proud of its reputation as "Capital of Amazonia", the town makes its living from ranching and gold. It is a bastion of the conservative ranchers' union, the UDR, two of whose members have now been arraigned for the murder of Chico Mendes, the rubber tappers' leader whose fight to save Amazonia had made bitter enemies within the ranching fraternity (see *The Ecologist*, Vol. 18, No 6). Down by the harbour, the city council has built an elaborate promenade, complete with bandstand and fountains. The bandstand is crumbling, the fountains do not work, and the paving stones are a network of pot-holes. There is not a single main drain in the town.

Over 60,000 settlers have now made Altimira their home, the vast majority of them living a desperate existence in the shanty towns on the banks of the Xingu. The conditions in which these unfortunates live are beyond description. A local Catholic priest recalls how a man called to



The forests in Brazil are being lost at four times the rate previously estimated — some 200,000 km² disappearing in smoke during the 1987 burning season alone, a figure equivalent to the United Nations Food and Agriculture Organization's previous estimate for the entire annual loss of forest worldwide. (Photo: N.Hildyard)

ask him to baptize his daughter who was dying: "The man and his family, five of them altogether, were in one room, no more than eight foot square. They had to sleep there, cook there, wash there, 'live' there, if that is the right word. Every other room in the shack had another family in it. The walls were made out of wooden slats, many of which were rotten or needed replacing, so there was little shelter from the wind or the rain. The man told me that the house belonged to the owner of the local brickworks where he worked. He was paid 14 cruzados (less than \$10) for a 60 hour week and paid 8 cruzados a month in rent. Almost all the money he had left went to buy medicines for his child. There was never enough money for a decent meal, and the children were clearly suffering from severe malnutrition. I baptized the child. She died later."

Down on the waterfront, an Indian woman rants against the planned dams. A small crowd of ranchers and boatmen surround her, laughing and goading her on in her drunkenness. Her eyes are full of anguish, her face tormented, but there is no sympathy from the crowd, only amusement. In a quick movement, surprising for one so drunk, she snatches a whip from one of the ranchers. For a moment she looks menacing, but her fumbled attempts to crack the whip only raises more laughter. A rancher removes the whip and the crowd disperses. She is left alone, just another "civilized" Indian.

Two hours upstream from Altimira lie the Ilas das Fazendas, now transformed into a warren of goldmines since gold was

first discovered some 40 years ago. Gaping holes — spanning a hundred metres or more — have been carved out of the hills, an army of *garimpos* (miners) hacking and digging away the earth and rock by hand. The pits, a sea of red mud, stand out like sores against what remains of the forest. Hundreds work here, pumping water from the river, hosing down the open face of the mine to wash down the earth, crushing the rock, washing the debris, and finally panning the muddy waters in an ever hopeful search for gold.

The gold fetches \$10 a gram, the mine's owner receiving 55 per cent of the sale and the *garimpos* getting the rest. But the 45 per cent that remains after the owner has taken his share must be divided up amongst the whole workforce: the panners get their percentage, the diggers theirs, the hosiery theirs, and the ubiquitous guards theirs, leaving most *garimpos* no more than just 2 per cent to live on. Few ever make it rich and most are in continual debt. They must rent their hovels of houses from the mine owners, who also control the shops where they buy their food, often at grossly inflated prices. VD is rife, as is malaria. Meanwhile, in Altimira and other mining towns, families await the return of husbands and fathers who have gone off in search of gold. Many never come back, too ashamed to return poorer than they left, leaving their "gold widows" to cope on their own. It is a world of broken marriages, disease and squalor. "And all this", my travelling companion John Papworth remarked, "after 40 years of mining one of the world's most precious commodities."

At the Ilas das Fazendas, mercury is still used to separate the gold from the ore, despite a government ban on its use following a public outcry over mercury pollution in gold-mining areas. In Rondonia, where gold production increased from 4 kilograms a year in 1974 to 3,600 kg/year in 1984, fish have been found with mercury levels 4 times in excess of the World Health Organization's safety limit. Mercury levels in the eggs of one species, the acari-bodo, were nearly 8 times higher than the WHO limit. Although they recognize the ecological threat mercury poses, the miners at the Ilas das Fazendas argue that they have no choice but to continue using it, since the ore is too fine for mechanical separation. Moreover, they distrust the Government's motives for the ban, insisting that its real purpose is not to protect the environment but to favour the larger companies which have the machinery to mine without mercury. Whatever the truth of that, there is little prospect that illegal mercury use will be halted. Like so much government legislation, the ban is unenforced — and, so long as gold-mining is permitted, probably unenforceable. Meanwhile, the pollution of the Xingu and other rivers continues, bringing yet another ecological catastrophe ever closer.

Forest Destruction

And then there is the inevitable deforestation. Flying over Amazonia, it seems almost inconceivable that the forests stretching for mile upon mile below, over an area almost the size of Australia, could be in jeopardy. But one has only to travel up the TransAmazonia Highway in either direction out of Altimira and the threat is all too clear. On both sides of the road, the forest has been cleared as far as the eye can see. For the most part, it has been cleared for cattle ranching. Today, there are over 8 million cattle in Brazilian Amazonia. Meat production is extremely inefficient (50kg/hectare/year), making ranching an activity which is so wholly uneconomic that it would probably never have been undertaken on the present scale if the Brazilian Government, with aid from the World Bank and other multilateral development banks, had not poured \$2 billion into subsidizing the cattle industry in Amazonia. Although further subsidies were suspended for a three-month period in December 1988, a suspension which has now been extended "indefinitely", many believe that they will be reinstated once Brazil has secured the international fi-

nancing it is now seeking for further "development" projects in Amazonia.

Although some of the land which has been cleared is now covered with secondary growth, its dense foliage is deceptive. Not only does secondary growth lack the biological diversity and soil and water retaining capacity of the original primary forest, but, unless left untouched for considerable periods (40 years or more) it will never regain anything approaching its former glory. Farming in the forest is thus only sustainable in the long-term if it is extensive, with the land being abandoned after periods of no more than three years and then left fallow for periods of 15-30 years to allow the land to recover. The colonists who have moved into Amazonia do not respect such long fallow periods, the fallow cycle being cut to between 3-5 years. The result is that the forest never has a chance to recover and is quickly reduced to scrub. Where the land is cleared for ranching, the process goes a step further: annual burning of the land to encourage grass growth kills the seedlings that would permit regrowth. The land is thus transformed into savannah, where little survives except fire-resistant (and often toxic) weeds; it is useless for agriculture and, after a time, useless even for cattle. Indeed, virtually all of the ranches set up in Amazonia prior to 1978 have now been abandoned.

Satellite photographs reveal that the forest in Brazil is being lost at four times the rate previously estimated — some 200,000 km² disappearing in smoke during the 1987 burning season alone, a figure equivalent to the United Nations Food and Agriculture Organization's previous estimate for the entire annual loss of forest worldwide. The figures for 1988 are expected to be even worse. The smoke over Amazonia was so dense that La Paz airport in Bolivia had to be closed on several occasions: many fear that over 400,000 km² could have been destroyed, leading the World Bank to issue a statement at its Berlin meeting describing the annual loss of forest as having reached a "critical level". Official figures put the area already lost at 4 per cent of the total forest domain: independent experts, however, say the real figure is closer to 15-20 per cent. If the destruction continues increasing at its current exponential rate, then, predicts Jose Lutzenberger, one of Brazil's leading ecologists, "by the year 2000 everything will be gone". And the year 2000 is little more than ten years away.

Already local people complain of changes in the weather — the rains coming

less frequently and more unpredictably. Indeed, scientists warn that deforestation is so disrupting the hydrological cycles which ensure the recycling of rainfall throughout Amazonia, that areas of unaffected forest downwind of deforested areas could be lost to desiccation rather than outright burning. The danger is particularly severe because most of the destruction is taking place in eastern Amazonia, the very area that supplies rainwater, through evapotranspiration, to the forests further west.

A Climatic Flip?

Equally worrying is the possibility — for too long dismissed as remote — that further deforestation could trigger a major climatic flip. Cutting and burning the forests not only adds appreciable quantities of CO₂ to the atmosphere, but — and this is a critical factor — it also deprives the earth of one of its major mechanisms for absorbing CO₂ — the trees themselves. The attack on the chemical equilibrium of the earth's atmosphere is thus twofold.

The fear is that the process could go beyond the greenhouse effect (which many scientists now accept is already under way) and actually change the chemistry of the atmosphere to such an extent that the higher mammals might not be able to survive. As James Lovelock, the originator of the Gaia Hypothesis, points out, "Earth is a responsive living organism that will at first tend to resist adverse environmental change and maintain homeostasis. But if stressed beyond the limits of what ever happens to be the current regulatory apparatus, it will jump to a new stable environment where many of the current range of species will be eliminated." Significantly, Lovelock sees tropical forests as one of the most important of Gaia's regulatory mechanisms. Fanciful as the idea of a climatic flip might seem, it is well to remember that for the greater part of the history of the planet, the atmosphere of earth was such that it could only maintain bacterial forms of life.

At the very least, the greenhouse effect can only be exacerbated by continuing deforestation. Indeed, the likely consequences of global warming are themselves sufficiently alarming to make steps to combat deforestation an international priority. Rising sea levels alone could lead, either directly or indirectly, to the loss of one-third of the world's croplands (see *The Ecologist*, Vol. 19, No. 1) and the flooding of several major cities over the next century.

Paranoid Xenophobia

Sensible discussion of the fate of Amazonia is forever dogged by a xenophobia that at times verges on the paranoid. Calls for a moratorium on the further development of Amazonia both by Brazilian groups (such as the *Save the Amazon* campaign) and international environmentalists have met with indignation. Typical of the response is that of one Brazilian who told me: "We won't tolerate the international community telling us what to do with Amazonia. If you cut off funding for further development and try to impose a moratorium, we would simply go it alone. I would rather that Amazonia was a desert so long as it was a Brazilian desert." Even amongst well-informed conservationists, there are those who see international concern over the future of the forests as a plot to undermine national sovereignty and keep Brazil poor. At one meeting, I was even assured that the majority of American missionaries in Amazonia were working undercover for US mining interests: why else had they been seen with geiger-counters? And who else would pay for their airstrips and private airplanes?

Such claims may seem laughable, but the obsession with national sovereignty that underlies them is not to be dismissed lightly. Brazilians — and in particular the military — see an unoccupied Amazonia not as an ecological blessing but as a political threat: without settlers to establish Brazil's rights to the land, the argument goes, Peruvians, Venezuelans, and others will simply invade and take what is rightfully Brazilian territory. Such thinking underlies the so-called "Calhe Norte" programme in the north of Amazonia, where the Brazilian army has set out to "secure" the 4 000-kilometre border with Peru, Colombia, Venezuela, Guyana, Suriname and French Guyana. Some 50,000 Indians, notably the Yanomami, are affected by the project.

Plans to develop Brazil's northern frontier were first mooted in the early 1960s, and led to the construction of several major roads in the area. The project came to little, however, partly because the lack of supply towns in the region acted as a disincentive to would-be settlers, and partly because there were insufficient funds to complete the planned Northern Perimeter Highway (NPH), which was eventually abandoned to the jungle. In 1985, the project was resurrected with a vengeance. For its part, the military announced it would set up outposts throughout the region, whilst the

civilian Superintendency for the Development of the Amazon detailed plans to complete sections of the old NPH project in order to exploit the area's massive mineral reserves, including the world's fourth largest reserve of bauxite. Deposits of calcium, potassium, phosphates, and cassiterite have also been earmarked for mining. To implement the project, it is intended to concentrate the local Indian groups, whose land it is, into "small population nuclei" and thus to release their land for industrial and agricultural projects. As such, the programme — quite apart from being ruinous to the environment — is in direct contravention of the new Civilian Constitution, which gives Indians the exclusive ownership of the land they occupy and the exclusive rights to the resources therein.

Debt Swaps

Nonetheless, there are some hopeful signs of change. International concern over the threat of climate change in particular has provoked a series of proposals to bring an end to deforestation in Amazonia, and has generated an increasingly polarized debate within Brazil itself. One issue on which there is some degree of consensus amongst those concerned with deforestation is the need for land reform. Few informed Brazilians dispute that there is more than enough good agricultural land within the south and centre of Brazil to feed the country, without a single hectare of Amazonia ever needing to be cultivated. The problem is that Brazil's most fertile agricultural land is now largely taken over by plantations producing crops, such as soya beans, for export. Eighty-one per cent of Brazil's farmland is now held by just 4.5 per cent of the population, and 70 per cent of the country's farmers are landless, having either been bought out by the larger estates, or simply driven off the land. Rather than take the politically explosive step of dividing up the large estates, however, the Brazilian Government has traditionally promoted the colonization of Amazonia as the solution to landlessness. Indeed, the now notorious Polonoroeste Programme (see *The Ecologist*, Vol. 15, Nos 1/2 and Bruce Rich in this issue) was officially promoted as "the largest agrarian reform programme in the world".

Agreement on the need for land reform is one thing; implementing it is another. The vested interests opposing the redistribution of land are powerful and intransigent: they include not only private land-

owners, but the Catholic church and major multinational companies, such as Olivetti, Volkswagen, Pirelli, BASF, Philips, Siemens and Hoechst.

Moreover, land reform without major accompanying changes in social and economic policies would amount to little in the long-term. So long as Brazil is committed to export-led economic growth, both to fund its crippling debt repayments and to finance further development schemes, plantation agriculture is inevitable, and with it a system of production that is inconducive to small-holders. However radical the land reforms, the concentration of holdings in the hands of more successful farmers would sooner or later re-emerge as a problem.

The need to service its debts has become one of the Brazilian Government's principle rationales for justifying its plans to develop Amazonia. To ease the debt burden, now standing at \$100 billion, many are now looking to "debt-for-nature" deals as a solution which would be beneficial to both parties, parcels of debt being effectively written off in exchange for agreements to preserve tracts of rainforest. Several such deals have been carried out by conservation groups, notably in Bolivia and Costa Rica, but the deals have involved small amounts of debt and small areas of forest. An initiative for a wider debt swap programme, however, has been proposed by Prime Minister Michel Rocard of France, who met with President Sarney of Brazil in February 1989. Publicly, Sarney rejected the overture outright, telling a press conference that "Not one inch of Brazilian soil will be sold to foreigners" — a slogan that not only ignores the sizeable areas of Amazonia already effectively controlled by multinational interests but which also distorts the intention of the proposed "debt-for-nature" deals, which, unlike conventional "debt-for-equity" agreements, are not intended to secure outright ownership of the land in question. Indeed, in what is the most far-reaching of the debt swap proposals to date, the financier Sir James Goldsmith has suggested that, far from having to cede their land as a *quid pro quo* for debt relief, tropical countries should in fact be paid a sizeable annual rent by the industrialized world in return for forests which are set aside and protected. Goldsmith would like to secure an international agreement on the Third World debt as a whole, in order to save not only Amazonia but rainforests throughout the world. But, as with land reform, debt-for-nature deals will achieve little without major policy

changes. At best, the authorities see such deals as part of a strategy which would effectively section off parts of Amazonia as national parks for "preservation", leaving the majority of the forests open for exploitation. It is a problem that has beset national parks throughout the world: once established, the parks provide governments with visible symbols of "environmental awareness" that are then used to deflect criticism from the destruction taking place around them. Moreover, unless the social and economic causes of deforestation are tackled at root, the assault on the forests will continue, slowed down maybe, but just as disastrous in the long-term.

A Change of Heart?

It is a fatal flaw that lies at the heart of all the "official" solutions to deforestation that have been proposed so far. This month, for example, the World Bank issued an unusually severe criticism of past Brazilian development policies (and the Bank's part in financing them) written by Dennis J. Mahar, an advisor to the Bank's own Economic Advisory Staff. The document, *Government Policies and Deforestation in Brazil's Amazon Region*, argues that blaming peasant colonists for deforestation (currently still the stock response of the multilateral development banks) is "tantamount to blaming the victim". It would be more accurate, says Mahar, to blame "misguided public policies which purposely or inadvertently encourage rapid depletion of the forest." Among the policies which Mahar criticizes are those which promote road-building, official colonization of the forest, and extensive livestock development. He concludes: "There is no doubt that rapid deforestation will continue if present policies remain unaltered."

Mahar proposes five immediate policy changes:

- "The elimination of fiscal incentives for livestock projects in Amazonia";
- "A moratorium on disbursements of fiscal incentive funds for any projects in the Greater Carajas area — such as the proposed (*sic*) pig-iron plants — which would use charcoal derived from the rainforest as their principle source of energy";
- The modification of policies which recognise "deforestation as a form of land improvement and, as such, grounds for granting rights of land improvement";

- The abolition of the so-called “50 per cent rule”, whereby farmers have to show that 50 per cent of their land is under cultivation in order to receive tax benefits and its replacement “by legislation which expressly permits the formation of contiguous ‘block’ reserves equal to 50 per cent of the total area under agriculture in a given region rather than 50 per cent of each farmer’s lot.”

- And, greater effort to improve the collection of taxes, such as the current 25 per cent capital gains tax on land appreciation, which “could help to dampen speculative pressures.”

Mahar argues that an “alternative development model” should be introduced “that emphasizes the region’s comparative advantage in forest-based economic activities. Under this approach, the Government would not construct any new roads or provide infrastructure or services (particularly land titles) until detailed land-use surveys were carried out. Once the appropriate surveys were completed and the productive potential of the land known, physical access would be permitted only under special circumstances. . . . Lands found to have limited agricultural potential — virtually all of the *terra firme* of Amazonia — would be held in perpetuity as forest reserves closed to all development or as sites for environmentally benign activities such as rubber tapping and Brazil nut gathering, tourism, or sustained-yield logging.”

Sustainable Development?

By World Bank standards, it is a radical proposal, although it should be noted that Maher’s book carries a disclaimer that its views are the author’s own and “do not necessarily represent the views and policies” of the Bank itself (indeed, they do not!). But even supposing that the rhetoric was translated into reality, would the zoning of Amazonia as suggested effectively halt the rush to destruction? Even assuming that the *terra firme* of Brazilian Amazonia (a large proportion of the total area) was set aside as extractive reserves or for forest-based industries?

All the schemes proposed to date for the “sustainable development” of Amazonia are intended to enable forest peoples to participate fully in the market-place, enjoying the consumer goods they now demand, but without destroying the envi-

ronment. Most involve marketing forest products, using traditional methods of production. Indeed, many schemes explicitly exclude the marketing of products which would lend themselves to plantation agriculture because of the deleterious environmental impact that this would cause.

Logging apart, there is little question that the forests of the *terra firme* are quite capable of providing a sustainable livelihood if ecological limits are observed: indeed, they have done so for generations of both Indians and rubber tappers. But that sustainability of production rests critically on two factors: first, a low level of material demand; and, second, a culture and a social organisation that not only recognizes ecological limits but which also respects those limits. The vital questions now facing environmental and indigenous groups alike is: Can those conditions be maintained once production is geared to satisfying national, let alone international, markets? And can sustainability be ensured whilst the “outside” world remains committed to export-led development programmes, even allowing for strict zoning?

If the forests of Amazonia have remained intact for as long as they have, it is largely because populations have been kept low and minimal demand has been placed on the forest’s resources. The forests have indeed been able to supply a sufficient surplus to ensure a bountiful life for small groups and protect them against lean times, but it is another matter entirely to expect them to supply a surplus sufficient to satisfy the demands of the same small groups once they have embraced the sort of consumerism that advertising and the market now foster. To pay for a modern consumer life-style, it would not be enough to market the odd Brazil nut: on the contrary, the marketable surplus required would be way in excess of anything achieved historically. The overall effect on the forests of achieving that surplus would be the same as a sudden rise in local population levels: and the greater the surplus demanded, the closer the forest’s carrying capacity would come to being exceeded. This is as inevitable as night following day: indeed, unless specific limits are placed on the volume of production and consumption, no form of sustainable forest management, traditional or otherwise, is likely to remain sustainable for long.

Such limits, however, depend vitally on the maintenance of traditional cultural values. Yet, so long as the wider national and international community remains

committed to growth-oriented values (which is what a policy of zoning and the continuing presence of a consumer society implies), it is highly questionable that such values can survive. Historically, the greatest threat to indigenous culture, apart from disease, has been the gradual encroachment of what is broadly termed the “consumer society”. Once fully enmeshed in the market economy (and there is scarcely an Indian group within Brazil that is not caught up in the market to a greater or lesser degree) it is all but inevitable that the very traditional social controls which enabled the Indians to live in harmony with their environment simply begin to break down. Already many groups have espoused a pattern of consumption that Linda Greenbaum, writing in *Cultural Survival Quarterly*, has likened to the “cargo cults” of Oceania. “Tribal members, by adopting certain symbols of Western technology (such as mock radios or airstrips) believe that they are becoming the dominant power instead of the white people.” Several groups, encouraged by FUNAI (the Brazilian Indian Agency; see Bruce Rich this issue for further details), have signed lumber contracts — often for pitifully low prices — with logging firms. “The money they receive”, notes Greenbaum, “is not being invested for the future, but is spent instead on consumer items, especially those of prestige value, and on ‘improvements’ in Indian reservations that are of no real benefit to the Indians.”

Even the Kayapo, whose culture is still strong, are not immune. In 1984, they sold 10,000 mahogany trees in exchange for the building of a 70 kilometre road, and again in 1987, 5000 cubic metres of mahogany in return for a 15 kilometre road, a Toyota, various consumer goods, a pharmacy, medical supplies and some livestock. Amongst the Suruí of Rondonia, logging is so extensive that, if it were to continue, then, one logger estimates, all the extractable timber on the reservation would be exhausted in five to six years. Other groups practising lumbering include the Gavaio, the Arrara and the Zoro.

According to Greenbaum, “Most of the Suruí men who had lumber contracts in 1987 were living in hotels in the nearby city. Those who were more prosperous had cars with chauffeurs and maintained steady relationships with white prostitutes. Exactly the same occurs with the Kayapo chief, Pombo, and some of his sons: alcohol, white women, hotels and automobiles for the elite prevail.”

The Indians themselves are acutely aware of the damage done, both to the en-

vironment and their society, by logging and the sudden influx of money. Indeed, the Suruí have now expelled lumbermen from their reserve, deciding that logging was not in their interests. Similarly, one Kayapo group is reported to have "banned" cars after a child was severely injured by a jeep bought with lumber money. But encouraging as that might be, the dilemma is still there: the desire for consumer goods may not be to the liking of ecologists, and it is certainly inimicable to the long-term health of the forests, but it is a reality, and so long as it remains so, the Indians will attempt to earn money in whatever way they can. Nor is money required just for consumer goods: to establish land-rights the Indians need lawyers, who do not come cheaply, and to win some degree of economic independence from FUNAI, whose integrationist policies have proved disastrous, the Indians need a source of income that they can control.

In that context, marketing forest products, using traditional techniques, is a preferable route to earning money via lumbering or, worse still, working in the city. Indeed, many anthropologists see such marketing schemes as the only hope of preserving Indian culture. But I have my doubts. The truth is that sustainable production and consumerism are incompatible goals. The one relies on limiting demand, the other on increasing it. Indeed, so long as economic growth (and calling it "sustainable growth" does nothing to change its fundamental character) remains the object of our economic activities, Amazonia will always be under the axe. Consumer goods do not appear by magic. Their production depends on recovering the very mineral resources that lie beneath Amazonia and whose exploitation inevitably involves the further opening up of the forests — with all the destruction that this entails. "Zoning" the forest may limit the destruction in a small way but it will not prevent it, for it is a policy that is still geared to the growth-oriented development programmes that are at the root of deforestation and, indeed, the poverty that feeds upon it.

Setting aside Amazonia for extractive reserves is a step in the right direction, but it will only postpone the inevitable if the "outside" world continues to pursue the devastating goal of further growth. The solution must surely lie not in surrendering further to the lure of the market, but in systematically disentangling ourselves from its clutches. In that respect, the saving of Amazonia relies as much on the international community turning its back on

growth, reducing the consumption of consumer goods, and adopting policies that reverse current economic trends as on any measures that can be taken within Brazil itself. For it is not just Brasilia and the Brazilians who will have to change, but Washington, London and consumers throughout the industrialized world.

Adios Amazonia?

But such thinking has yet to enter the political agenda in the industrialized countries, outside of the fledgling Green parties, let alone in Brazil. There, the destruction of Amazonia is still seen by the authorities as resulting from "poor planning" rather than the policies that underlie that planning: and the further development of Amazonia is still an Act of Faith for the majority of the population. Indeed, so far as the Government is concerned, the Indians are little more than a nuisance, not least because of the international publicity which their cause attracts. Integration is still the order of the day: as Fernando Mesquita, the Government spokesman on the environment, told the *Financial Times* reporter at Altimira, "The environment is not an isolated problem. There are 220,000 Indians in Brazil, but in the largest favela in Rio de Janeiro alone, we have 300,000 extremely poor people and 10 per cent of them are armed."

Such thinking will not change overnight, but it received a direct (and public) challenge at Altimira. Indeed, in that respect, it is no exaggeration to call the Indians' gathering "historic". Not only did it cement a powerful alliance between indigenous rights groups, environmentalists and the Indians themselves — an alliance that looks set to continue, with further gatherings planned throughout the year in the run-up to Brazil's elections — but it gave voice to a vision of the future, based on traditional ways, that does not accept the need for industrialization as its starting point. As Paiakan put it: "You ask me how we will produce electricity without the Altimira dams. You should be asking me whether we even need electricity." If such ideas are able to fill the ideological vacuum that now exists in Brazil — a country as bankrupt of ideas as it is of money — then there is indeed hope for the future.

But time hangs like a sword of Damocles over Amazonia and its people. For time is one thing that neither the Indians nor the forests have to spare.

The Altimira gathering is over and I am sitting on the verandah of the local Catho-

lic mission, overlooking the Xingu. "A country is only civilized if it has tea at 4 o'clock", remarks John Papworth self-mockingly, putting down a pot of Earl Grey tea, brought all the way from England. He pours the cup and welcomes Maria Aparecida from CIMI, an indigenous rights group, to the table. "I have some terrible news," she says, "I have just heard that 100 Yanomami have been killed by *garimpeiros*. They burnt the village and forced all the women and children to leave." Her voice is shaking and there are tears in her eyes.

The sun goes down, bringing this year's burning season a day closer, and with perhaps 800,000 square kilometres set to be destroyed. The day of reckoning — perhaps as little as ten years away — edges closer by the minute.

Adios Amazonia. Adios. Unless all of us take action now. And there is no better place to start than right here at home.

• How you can help. *Support The Ecologist's million signature campaign calling for an Emergency Assembly of the United Nations to address the problem of deforestation by implementing a radical strategy as outlined in The Ecologist's, A Plan to Save the Forest (Vol. 17, Nos 4/5). For further details and petition forms, write to: ECOROPA, Henbant, Crickhowell, Powys, Wales, UK.*

• Support the Indians. *The Ecologist, through The Ecological Foundation, has sent £3000 to the Union of Indian Nations in Brazil to help the Indians organize further gatherings and ensure that the process started at Altimira continues. If you wish to contribute, please send your cheque to The Ecologist, Station Road, Sturminster Newton, Dorset.*

"The *Ecologist* was the first publication to launch a head-on attack on World Bank funding policies. At the time, most environmental and development-oriented NGOs regarded its ideas as too extreme. But, in the last four years, things have changed considerably. The ideas proposed in *The Ecologist* in 1985 are now echoed in the *National Geographic* — and the multinational Development Banks are paying attention."

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Strip-mining for lignite is threatening the survival of the tight-knit community of Moortown on the western shore of Lough Neagh in Northern Ireland. Local opposition has been fierce and surprisingly effective.

Community Survival and Lignite Mining In Ireland

by Susan Baker

Case studies of the ecological and social impact of industrial development projects often focus on the Third World, where the destruction caused is most dramatic. But the same processes are equally at work in the industrialized world. In the North of Ireland, a lignite mining scheme, sponsored by the government and multinationals, threatens to shatter a tight-knit fishing community on the shores of Lough Neagh. The Lough's finely tuned ecosystem will be changed forever. But local opposition is strong, and offers an example to other communities similarly affected.

Lough Neagh, the largest fresh-water lake in the British Isles, is situated in the centre of the North of Ireland in an area of great natural beauty. It is surrounded by flat peatlands and is an important sanctuary for over-wintering birds. The economic life of the human communities scattered along its 77 miles of coastline has been sustained for millennia by farming and fishing.

All this is now under threat. Recent geological surveying has confirmed the existence of commercially viable deposits of lignite in the Lough Neagh basin. The area faces the prospect of strip-mining and, if government and foreign business have their way, the very foundations of this

community as well as the finely tuned ecosystem of the lough could be changed forever.

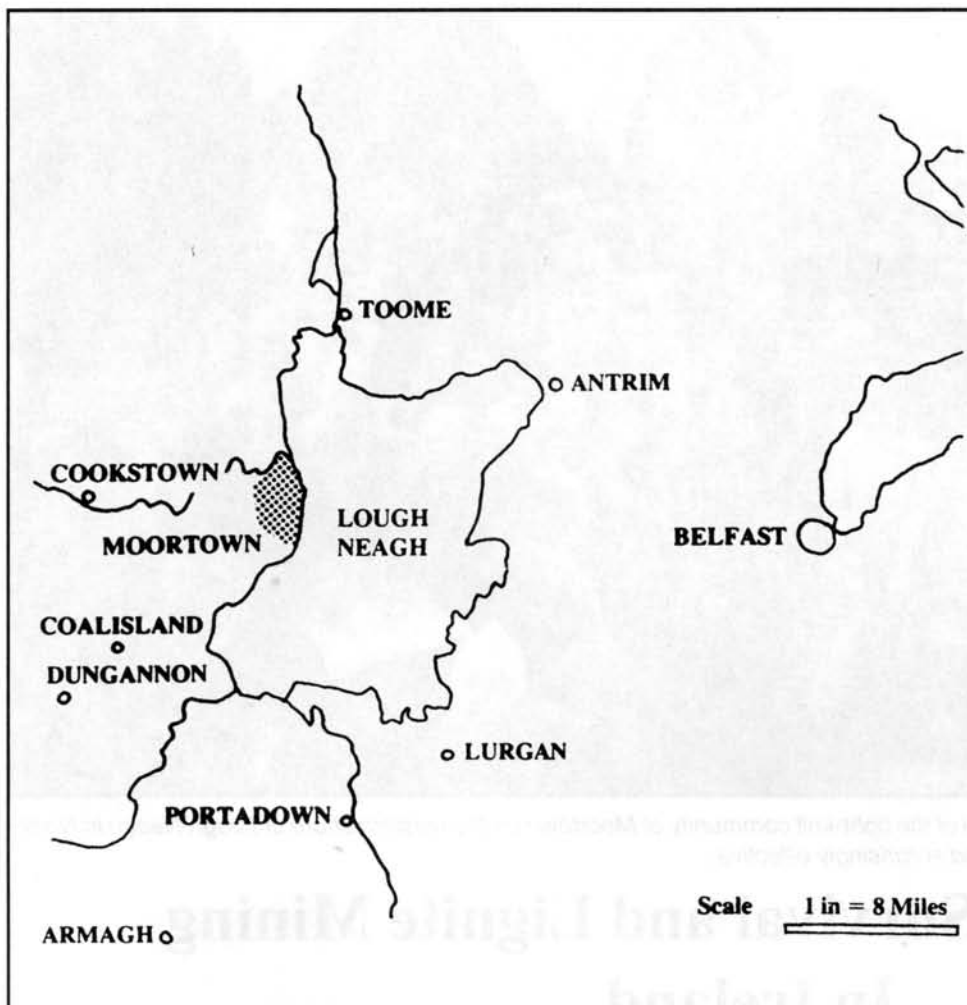
The community of Moortown, on the western side of the lough, has begun to fight back against the well organised interests which threaten its existence. As geological surveying increasingly reveals the presence of mineral-rich deposits throughout Ireland, similar threats are felt by many other communities. The response of Lough Neagh's Moortown community may provide these other groups with an important example.

While the presence of seams of lignite or 'brown coal' in the North-East of Ireland has been known since before the eighteenth century, it was not until the early 1980s that deposits on a commercially viable scale were finally confirmed.

The Geological Survey of Northern Ireland has reported the existence of lignite on both the eastern and western shores of Lough Neagh and further north in the Ballymoney/Stranocum area.

Commercial exploitation of the lignite is most likely to begin with the Lough Neagh deposits as these have been more fully surveyed. To the east of the lough, at Crumlin, geological exploration has confirmed the presence of an estimated 420 million tonnes of recoverable lignite. Of this, about two-thirds lies off-shore. It is envisaged that the deposits under the lough will be exploited through the construction of dams from the shore to a small island, Ram's island, just off the coast, and the draining of the enclosure. The second main area of interest is around Moortown, where the evidence indicates a 40 metre

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North-east Ireland. Shaded area shows position of Moortown.

thick on-shore seam, containing approximately 200 million tonnes of lignite. Surveyors believe, however, that the Moortown deposits may well prove to be at least as big as the Crumlin seam.

Multinational Involvement

Three main companies are involved in the prospecting. At the Ballymoney/Stranocum deposits, the Australian-owned Mee-kathara Minerals has sole rights. In the Lough Neagh area, BP Coal, a subsidiary of the giant BP Oil Company, holds the major licence. A smaller English-owned company, Greenmore Holdings, is also involved. Greenmore has recently changed its name to the more local-sounding 'Ty-rone Lignite Ltd'. This name change does not hide the fact that the companies most likely to mine the lignite deposits are foreign-owned subsidiaries of multi-national companies (MNCs). MNCs have played a significant role in the industrialization of Ireland and in the mining and mineral sector, especially in the Republic of Ireland. As in the past, the further penetration of MNCs into the island's economy is unlikely to bring economic benefits that

are oriented towards the needs of the local economy.

Government Policy

Lignite can be put to a number of uses ranging from compression into briquettes through to the extraction of chemicals and the development of a "petrochemical" industry. The commonest use is in the generation of electricity, with Germany and Yugoslavia leading this field. Both BP Coal and the Department of Economic Development Northern Ireland (DEDNI), the Government department responsible for energy and mineral policy, favour the use of the Crumlin and Moortown lignite to fire a mine-mouth power station, with Crumlin as the preferred site for the station.

There are a number of reasons for this policy option. Electricity generation in the North is heavily dependent upon imported oil and requires a large annual subsidy from the UK Exchequer (the unit cost for the consumer, however, is among the highest in the UK). Many of the smaller power stations operated by Northern Ireland Electricity (NIE) are about to come to

the end of their useful lives and new capital investment is urgently required. The lignite deposits are seen as presenting the solution to these difficulties.

Back Door Privatisation

Under the influence of the current British Government's *laissez-faire* economic policies, DEDNI wishes to see the future development of the electricity sector undertaken by private companies. By using the lignite deposits for the generation of electricity, it is hoped that a major part of Northern Ireland's electricity service can effectively be brought into private hands through the 'back door', avoiding the kind of public scrutiny that the electricity sell-off is encountering in Britain.

Finally, this lignite policy was considered to have a major political advantage. The Secretary of State for Northern Ireland, Mr Tom King, clearly sees a large-scale financial commitment, such as that involved in the operation of the mine and its power station, by the private sector, as a vote of confidence by private investors in the future of Northern Ireland. It was believed that this would counteract the 'troubled' image that the area projects to the outside world, and therefore make easier the attraction of further inward investment.

However, prior to the lignite discovery, DEDNI had made a financial commitment to the development of Kilroot, Northern Ireland's largest power station. This was used as a major plank in the opposition to the lignite plans mounted both by the Federation of Unions Supplying Electricity (FUSE) and NIE, neither of which were opposed to the mining and power-station plans in principle, but rather to their timing and to the private sector involvement. Other groups played a part in this opposition but, as we shall see below, they were involved for very different reasons. Between 1985-1988, this opposition strengthened, with the result that the Government was forced to abandon its plan to begin exploitation as soon as possible of the lignite at a mine-mouth power station at Crumlin. Since August 1988, therefore, the use to which the lignite deposits are to be put has remained uncertain. But big business and government are still committed to the exploitation of the deposits. To that end, all companies have been given the go-ahead to continue their seis-

mological surveys and the drilling of boreholes in the Lough Neagh basin.

Undemocratic Mining Laws

Under the Mineral Development Act (NI) 1969, DEDNI has the major say in the decision-making process concerning the mining of mineral deposits. Its legal authority is, however, subject to some modification. For example, before issuing a prospecting licence, DEDNI must inform the public and shall take into account any representation made to it. The Act is unsatisfactory in that it only allows local people to express their concerns through representation and, most importantly, DEDNI does not have to act upon these concerns. Within this legal framework, access by a local community to what is known as 'the agenda-setting stage' in the decision-making process, is denied, and participation in the actual decision-making itself is restricted.

This raises an issue that lies at the core of the problems surrounding mineral exploration and mining. The decision-making process, from agenda-setting, through to formulation and implementation, is totally undemocratic. Mining laws, such as the one operating in the North of Ireland, allow government to own the mineral deposits, irrespective of the community in which they are located. Furthermore, these laws allow decisions concerning exploitation to be made without necessarily taking into account the representations of the communities or individuals under whose lands the deposits are found. Secondly, in making these decisions, governments rely upon scientific and economic feasibility data and (if available) the environmental impact assessments supplied by the very economic interests which wish to exploit these deposits. For example, DEDNI's main consultants throughout the lignite project has been *Rheinbraun*, one of Germany's largest lignite mining companies. Multi-national companies are internationally and nationally organised through an intricate network of 'Business Interest Associations' which have privileged access to resources, contacts and institutional structures. These are often the chief, or only, source of government information, and they inevitably reflect the needs and interests of the mining and mineral companies.

Access to, and participation in the decision-making process and, ultimately, some degree of control over that process

The lack of public accountability in dealings with MNCs gives the lie to the alleged participatory nature of modern society and the openness of its democratic structures. If communities like Moortown are to have a say in shaping their own lives there must be new mechanisms of accountability and control.

by the different groups that comprise society, are at stake here. The involvement of MNCs in the mining operations raises this question in a direct manner. Foreign-owned (and thus with their power centre located outside the area in question), such companies are rarely, if ever, subject to public accountability. The secrecy of the negotiations that take place between government and the MNCs, and the lack of availability of, or access to, statistics or other data are among the reasons why public scrutiny is rarely, if ever, possible. Such companies are capable of closing shop and transferring their investments to other host countries. In this context, the prospects of holding such companies responsible for failures, such as not clearing up after mining operations, are extremely limited.

Lignite Action Group

The emergence of the Lignite Action Group (LAG), in the Moortown area, must be seen in the context of the initial government plans to exploit the lignite deposits. LAG was established as an information seeking group, after a public meeting, attended by about 500 people, in Moortown in March 1985. The meeting was held to express concern about test-drilling being carried out in the area, and to try and discover the reason for it. Many locals had been told that the test-drilling was for water. Once established, LAG quickly began to develop beyond its original aims.

Since then the role that LAG has adopted, and the manner in which its aims are expressed, as well as the impact that it has had upon the issue, owe much to the nature of the community from which it sprang. Moortown has a six mile shoreline along which live 26 per cent of the

Lough's fishing families. Fishing is the principal economic activity, with 100 out of the total 266 families involved directly and many others indirectly, for example in fish processing. Forty families carry out small-scale farming and the rest are involved in construction and small industries.

The community is distinctly defined geographically, being bordered on the east side by the lough, to the north by the Ballinderry River, to the west by mainly peat, bog-land and woodlands, and to the south by a large disused airfield. The district is rural and very traditional in nature. Socially the community is closely knit. A survey of Moortown in 1985 revealed that of the 123 old people, all but two, who were in hospital, were being cared for by their families, next of kin or neighbours. In short, the Moortown community is a highly self-conscious one. It has a strong sense of history, a distinctiveness in its population and a way of life dominated by the lough. Having fought and won a 300 year battle for eel fishing rights from the local landlord, the lough continues to play an economic, cultural and social role in the community, one that the community does not wish to see disappear.

Destruction of the Community

LAG has grown out of this community and its concerns relate directly to it. In the first place, there is a fear of possible flooding of their townland by the mining operation. Moortown is very low-lying and even two miles inland the land only rises to 15 metres above the Lough. LAG believes that if the seam of lignite below the sea-bed was removed by open-cast mining, even after replacement of the top layers of soil and clay (the 'over-burden'), the region would remain at least 35 metres below the lough. This, LAG believes, would result in the enforced resettlement of the local population and, ultimately, the destruction of their community.

The families in the area are keenly aware of the impact of such resettlements in other areas where lignite mining operations are found. Local television programmes and locally produced videos and slide shows have graphically depicted such scenes from West Germany. In conversation, locals refer frequently to these images. Concern has also been expressed about the ecological impact of open-cast mining. It is expected that the mining would change the level of the water-table

and would return oxygen-depleted water to the lough. LAG is concerned that the mining would not only destroy the eel fisheries and the flora of the lough, but also the livelihood of the local population. Furthermore, the local population does not possess the skills necessary to benefit from the alternative job prospects at the mine or, if built, a power-station. The issue at the heart of community action in the Lough-shore district is one of community survival.

The lignite issue, like any other policy issue in the North of Ireland, has become tied in with the politico-religious divide that goes to the very heart of the Northern Ireland state. Moortown is a predominantly Catholic community with a strong Irish identity. The fact that the Government's initial plans envisaged the power station being located on the eastern, predominantly Protestant, side of the lough where mining was not proposed, and the potentially more disruptive mining was to take place on the predominantly Catholic western side did not go unnoticed. The lack of interest shown in the fate of the Moortown community by the MP for the area, the Rev. William McCrea, a member of the sectarian protestant Democratic Unionist Party, was also noted. Likewise, the failure of the Unionist-dominated Cookstown District Council to give funding to the community and to LAG, despite an application for aid, was viewed as a sectarian response towards the local people.

Although LAG were keenly aware of this dimension to the dispute, they deliberately did not raise it at the public level. LAG has been seeking to facilitate as much participation by the local community as possible and if the issue were addressed in a sectarian manner then sections of the community would lose their voice. If the issue was appropriated by established political interest groups, they would be able to define the issue in terms of the standard political framework operating in Northern Ireland, and fragment the community's response along party political lines.

Fundamental Principles

The fundamental principles upon which LAG rests are a commitment to non-sectarian, non-violent and non-party political action. It is an unusual combination to find on the Northern Ireland political stage. LAG argues that its own actions and also government policy should be directed to-

wards the needs of the Moortown community as a whole, and not any individual sector within it. Furthermore, it has argued that any decision concerning the use to which the lignite should be put, should be made not by the traditional hierarchical decision-making process, but rather as a result of agreement among the different interests associated with the Moortown area.

Prospecting Rights

Not all of the population are as cautious as LAG in their response to the discovery of lignite. For some, especially for the small farmers of the district, the discovery of lignite in their otherwise poor lands offered a hitherto undreamt of possibility of financial gain. It is from among this group that one finds a number of families who have conceded initial prospecting rights to BP Coal, paid at £1,000 per bore-hole.

This group differs fundamentally from the fishing families who, with their long-standing traditions and successful co-operative, form a more cohesive and organised group. The fishing families have little to sell to BP Coal and still less to gain from them. Nevertheless, despite these pressures, to date only 14 families

have given BP Coal rights of access to their lands and two of these families have, with dramatic gestures, returned their cheques to the company.

Since its formation in 1985, LAG has been active in local information gathering and education. It conducted a march and rally at the Ardboe High Cross, an ancient Celtic cross which could be said to be a symbol of the group. They also marched to Belfast where they delivered 2,500 protest letters from the Moortown community to DEDNI. LAG has also responded to around 500 requests for information from various sources, including school children, community groups and youth associations. While welcoming this attention, LAG has argued that Moortown cannot continue to sustain itself as a community in the face of this publicity, and that as a group it is increasingly diverted from its main aims of representing that community's interests in the face of threat.

In 1986, LAG had a meeting with Mr. Rhodes Boyson, the former Minister of Economic Development in Northern Ireland. This, and other interactions with Government, have resulted in DEDNI promising a public inquiry if full mining licences are to be granted for the district. Faced with the resources of the private sector, and the power of government to determine the terms of reference of such an inquiry, the likelihood of influencing the outcome by this route must be treated with scepticism.

LAG's position on a public inquiry is that the issues of prospecting and mining should be dealt with concurrently, as they see both as part and parcel of the same mining process. They do not want to wait until BP Coal are already located in the community before such an inquiry is held. They argue that community divisions, for example, between those who have and those who have not allowed bore-hole drilling, may have deepened too much by that stage.

As well as a fully public inquiry, with terms of reference that reflect the community's concerns, LAG also wishes to see an Environmental Impact Assessment (EIA) undertaken. They wish to have the results of the inquiry and the EIA made available and a plebiscite of the community then taken that will determine the final decision. In this strategy, LAG has argued that, as they are dealing with potentially the largest industrial development project ever undertaken in Northern Ireland, it wants every effort to be made to view the impact in the widest terms before any decision is made.



Ardboe High Cross. This Celtic cross has become a symbol of the Lignite Action Group which draws its strength from the local community's strong Irish identity.

One Sunday night in February 1988, BP Coal tried to move heavy equipment into the area. The following morning the convoy was intercepted by a one-person picket mounted by a member of LAG. The drilling equipment came to a halt and soon negotiations began. Within a day, BP Coal had flown in its executives from London to meet with LAG and as they did so a large protest took place by people from the community.

After eighteen months of attempts to meet with BP Coal, LAG was delighted that its direct action against the company should be so successful. The result of the subsequent negotiations between BP Coal and LAG was that BP gave a categorical assurance that there would be no prospecting in the area without prior consultations with LAG and the community.

Negotiations have since been going on between BP Coal and LAG to find a way forward for both parties in the dispute. However, knowing that DEDNI had the ultimate control over the decision, LAG successfully campaigned to bring them into the negotiations with themselves and BP Coal. As a result of the consequent tripartite discussions, DEDNI has stated that it will not re-issue prospecting licences to BP Coal (which expire in May 1989) unless BP and LAG are agreed on a programme of work to be carried out within the period of the new licence.

Temporary Victory

LAG see this as a victory, albeit a temporary one. For BP Coal, given DEDNI's mandate, such negotiations represent the only realistic way it can seek to gain access to land for drilling bore-holes and ultimately to gain a mining licence from government at the least cost. These negotiations are currently centering around an independent environmental impact assessment, community as opposed to individual compensations, and the holding of a referendum. However, they remain fragile: the negotiations arose out of confrontation; the issues at stake are vital; the economic interests of the MNC and the wider cultural and social interests of LAG are not easily reconciled; and the sense of urgency, with the negotiations having to be completed by May, does not facilitate ease of discussion. As the negotiations and controversy move into their fourth year, individual LAG members complain of fatigue and the strain of such intense commitment is beginning to show.

LAG has had support from a wide variety of sources. These sometimes make for rather unexpected alliances. A number of radical groups in the Belfast area have lent their support, and the Royal Society for the Protection of Birds is deeply concerned as Lough Neagh is a designated International Bird Sanctuary. The shore-line is also protected by the Ramsar Convention on the protection of wetlands, to which the UK is a signatory. LAG has also received advice from the Donegal Uranium Committee (DUC), a group which conducted a successful campaign to halt uranium mining in the Donegal area in the early 1980s.

Despite this wider support, the campaign against lignite has remained predominantly local. Nevertheless, the issues that LAG and the Moortown community face are not exclusive to it. Other communities face similar threats. At present in Ireland a community in the Killary Harbour/Croagh Patrick area of County Mayo faces the threat of gold mining and another in Glenarm, County Antrim, the prospect of fish farming. It is therefore important to know what these and other groups can learn from the lignite controversy.

Lack of Public Accountability

Several issues are related directly to the public policy decision-making process. Lack of access to, participation in, and control of the many stages in that process make communities like Moortown vulnerable. The lack of public accountability in dealings with MNCs gives the lie to the alleged participatory nature of modern society and the openness of its democratic structures. If communities like Moortown are to have a say in shaping their own lives there must be new mechanisms of accountability and control.

The Lignite Action Group has, with limited resources, attempted to have a say in shaping the future of its own community. In doing so, it has tried to shift the debate outside the realms of traditional political discourse, and has sought to adopt a new unit of analysis and to operate within a non-violent framework. Despite these advances LAG has a major flaw: it has not developed a policy and programme that could operate on a lough-wide basis. The lough is not only a single ecological system, but it has other communities on its shores equally threatened by lignite mining. Halting mining in Moortown may keep that community intact in the short-term, but in the long-term

mining on whatever shore could seriously disrupt the community's livelihood. Action for a lough-wide policy may make governments realise that, in the face of urgent and increasing national and international pressure to deal with the environmental crisis, that it is critical to listen to those who live within the boundaries of local ecosystems. Perhaps this is the lesson that this community of Moortown can begin to teach us.

But there is a further issue at stake. This is the question of community sustainability. Communities have existed in balance with the ecology of Lough Neagh for thousands of years. Large-scale mining would overthrow that sustainability for the sake of a mine with, at most, a thirty year life-span. If we are to restore the balance necessary for the continued existence of life on this planet then we need to shift from a short-term view to a longer-term vision. Moortown is a prime case of this: the very notion of swopping a thriving and sustainable community for the short-term gains of an individual company has neither logic nor justice. Such a decision would not only destroy the diversity of fish and bird life in the lough but make a further mockery of policies that designate areas as Bird Sanctuaries and then proceed to ignore these designations in the interest of economic gain. Finally, this policy would threaten yet another community and along with it the wealth of its local cultural traditions. Such wealth, once abundant in Ireland, is now under continuous threat.

Copies of LAG's booklet *Lignite on the Loughshore: The Case for Community Survival* may be had from Niall Fitzduff, 84 Drumenny Road, Coagh, Northern Ireland, price 50p + Stamped Addressed Envelope.

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Towards a Biospheric Ethic

by
Edward Goldsmith

Modern moral philosophers have tended to study ethics in a void, ignoring the insights of the natural and human sciences. Although several of our most noted and thoughtful biologists and sociologists have sought to correct this, they have based their ethical principles on a grossly distorted view of nature and human society. The result has been a "technospheric" ethic that seeks to equate progress and the moral good with economic expansion and the dominance of man over nature. A new "biospheric" ethic is required. One that places ethical values in their appropriate context: that of mediating human behaviour in its relationship with society, the ecosystem, the biosphere and the Cosmos itself.

One of the first questions to answer in a serious discussion of ethics is whether there exists an acceptable criterion for determining whether or not an action is ethically right or wrong. Dobzhansky thinks that there cannot be, because it would limit "the essential human faculty for the exercise of freedom."¹ Waddington, on the other hand, thinks that there can be. "I wish to maintain", he writes, "that it is possible to discuss, and perhaps to discover a criterion which is not of an ethical nature, but is, if you wish, of a supra-ethical character; a criterion, that is to say, which would make it possible to decide whether a certain ethical system of values is in some definite and important sense preferable to another."² The criterion which he suggests is "wisdom". Indeed the wise man rather than the educated man, let alone the scientific expert, is above all, he who can best distinguish what is right from what is wrong.

What are ethics?

I think one can consider all natural systems, including humans, to be endowed with a set of instructions whose implementation, in the light of the model of their relationship with their total spatio-temporal environment, has enabled them to achieve their goal of helping to maintain overall Gaian stability or homeostasis, and thereby their own stability or homeostasis. These instructions are organized hierarchically, the more general — and hence those that determine the basic features of a system's behaviour and which reflect the longest experience — being differentiated into more particular instructions which determine the system's less basic features, those that it has acquired in the more recent past. One of the most important, and indeed indispensable, features of the general instructions is that they should be *non-plastic*, and hence immutable in the short-term at least. This is the only way in which continuity, and thus stability, can be maintained. That is why genetic information is non-plastic. If it were not, then there would be nothing to prevent zebras from engendering baby wildebeeste and vice versa. This is also why cultural information, that which mediates the behaviour of social groups, must be non-plastic. If it were not, then such social groups could display neither continuity nor stability, nor could their behaviour

be homeotelic and thereby serve to maintain the order of the Cosmos. Such non-plastic instructions, at the cultural level, I regard as moral values.

The Acceptance of Authority

Waddington points out very explicitly that instructions are useless unless they are accepted and acted upon. For this to be possible, they must be regarded as authoritative. He considers that "the sociogenetic continuum" cannot be maintained "without the existence of the role of an authority acceptor." For him, "ethicizing is for man an integral part of the role of the taught or the authority acceptor — without the existence of which his cultural socio-genetic evolutionary system could not operate."³

Piaget saw ethics in the same way. "It seems to us an undeniable fact" he wrote, "that in the course of the child's mental development, unilateral respect or the respect felt by the small for the great, plays an essential part; it is what makes the child accept all the commands transmitted to him by his parents and is thus the great factor of continuity between different generations."⁴ As the child grows up, this eventually generates co-operation and mutual respect.

It could be argued that the acceptance of knowledge transmitted in this way is epistemologically unacceptable. But as Waddington noted: "...a great deal of social transmission takes place at a time when the recipient is much too young to apply any verification procedures, which must be regarded as relatively sophisticated mechanisms for adjustment and rectification rather than as basic elements in the fundamental mechanism of transmitted information which is accepted, rather than on information which has been tested and verified."⁵

One can go further than this. Propositions are clearly not accepted in the real world — no more by scientists than by children — because they have been verified, or because they are falsifiable (Popper's proposed criterion), but because they fit in with a particular paradigm or worldview, which, in the case of children may be embryonic and hence in its formative stage. Indeed, 'empirical' verification, as Popper showed decades ago, is not a realistic concept.

The process by which we build up information has, in any case been validated by the evolutionary process itself — of which it is the product. As Waddington wrote, "...like all other products of evolution, information has been molded by the necessity to fit in with — or rather, to put it more actively, to cope — with the rest of the natural world. The intellect is an instrument forged for the specific purpose of coming to terms with things."⁶ This is an essential point that is rarely made and whose acceptance is alone sufficient to validate knowledge acquired subjectively by intuition by members of societies that have learned "to cope with the rest of the natural world."

What, we might ask, makes the 'authority acceptor' accept the instructions and adopt them as the ethical principles underlying his code of conduct? The answer is that they must be sanctioned, authenticated, validated, indeed sanctified, by something more important than himself which he regarded as embodying wisdom, authority and sanctity. Matthew Arnold referred to this as "something, not ourselves, that makes for righteousness."⁷

It makes sense to suppose that that "something not ourselves" should be the natural world of which we are an integral part — and whose laws we must clearly observe if we are to survive. Significantly, it seems probable that we are cognitively adjusted by our geneto-cultural inheritance to regarding nature as the ultimate authority. As Worster writes: "Few ideas have been recycled as often as the belief that the 'is' of nature must become the 'ought' of man."⁸

Even in the nineteenth century — a period which saw the development of technospheric euphoria and the revolt against nature which helped to rationalize this euphoria — sociologists still looked to nature as the ultimate sanction for our ethical system. As Greta Jones writes: "The search for a social theory was, for the vast majority of nineteenth century sociologists, a search for a 'natural' underpinning to social order and, in addition, for a theory of the individual's obligation to respect that order."⁹

Even those who explicitly rejected the notion that our ethics cannot be derived from nature could not, in spite of themselves, avoid doing just that. Thus Lester Ward, who saw nature as evil and preached state-controlled economic development as a means of creating a paradise on earth, stated that his programme ('collective telesis') could alone "place society once more in the free current of natural law."¹⁰

Even Edward O. Wilson, the father of twentieth century socio-biology, who strenuously denies that our ethics can be derived from nature, cannot avoid telling us, in an unguarded moment, that our ethical values are the product of the evolutionary process. "The biologist, who is concerned with questions of physiology and evolutionary history," he writes, "realizes that self-knowledge is constrained and shaped by the emotional control centres in the hypothalamus and limbic system of the brain. . . . What, we are then compelled to ask, made the hypothalamus and limbic system? They evolved by natural selection. That simple biological statement must be pursued to explain ethics and ethical philosophers, if not epistemology and epistemologists, at all depths."¹¹

Evolution: The Source of Ethics

If nature is that "something not ourselves" that makes for righteousness, this means that ethical behaviour must be that behaviour which enables a living thing to fit into the natural world, to behave as part of it and, hence, to observe its laws or

constraints. In particular, it means that the evolutionary process that brought about the natural world, that all encompassing life process, must provide the best guide to ethical behaviour. This was the view of both C H Waddington and Julian Huxley. "We must accept," Waddington wrote, "the direction of evolution as 'good' simply because it is 'good' according to any realist definition of that concept. . . ."¹² This must be sound common sense. Indeed, "... if any individual approaches a nutritionist and says that he prefers to grow in an abnormal and unhealthy manner, the nutritionist can do no more than tell him that if he does so he will be out of step with nature. The criteria of biological wisdom in the case of ethics, or healthy growth in the case of eating, which can be derived in this way, are immanent in nature as we find it, not superimposed on it from outside. . . . The criterion we are applying here is *one of general accordance with the nature of the world as we observe it.*"¹³

Julian Huxley felt the same way. In his Romanes Lecture of 1944, he stated that there was an overall direction in evolution. This direction he took to be "good" and suggested that it provided a yardstick against which to measure ethical values about which we may be in doubt. This point was made even more strongly by Ralph Gerard, one of the leading holistic biologists at the University of Chicago in the early 1940s, who contended that "a pronounced pattern of observed direction in nature provides man with all the guidance he needs for 'shouldness'. If nature is found to be a world of interdependence, then man is obliged to consider that characteristic a moral dictum."¹⁴ The evolutionary trend towards closer integration was, he argued, "like a straight path through a dense wood, requiring of the pathfinder that he remain on the track and follow it through."¹⁵

Unfortunately however, all these scholars were imbued with what might be referred to as "the world-view of modernism", whose principal role is to rationalize, and hence legitimize, economic development — that enterprise to which our society is entirely committed and which leads to the development of the 'technosphere' or the surrogate world of human artefacts. Not surprisingly they sought above all to persuade themselves, and everybody else, that the Promethean enterprise to which they were committed was a fundamentally moral one. Sadly, neither C H Waddington nor J S Huxley, for all their insights, were exceptions to the rule.

But before we consider their position, let us first consider that of Herbert Spencer and the social Darwinists who preceded them.

Social Darwinists

Herbert Spencer and his colleagues preached an ethic of individualism, competition and aggression, an ethic which they justified as being in accordance with "natural law". As Spencer wrote, "Progress is not an accident but a necessity. Instead of civilization being artificial, it is a part of nature, all apiece with the development of an embryo or the unfolding of a flower."¹⁶

The social Darwinists painted a very distorted view of nature, however. They saw it as random, chaotic, atomised, competitive and aggressive, ignoring its more fundamental co-operative aspects. For William Graham Sumner, the main prophet of social Darwinism in the USA, "competition", in the words of Richard Hofstadter, "was the law of nature which could no more be done away with than gravitation."¹⁷

The stress on competition was an essential tenet of social Darwinism, for in terms of Darwinism itself, then the established

The ethic of progress — in effect, the ethic of perpetual technospheric expansion — is in reality no more than an ethic of biospheric destruction. It is not an “evolutionary ethic”. On the contrary, it is an anti-evolutionary ethic.

theory of evolution, and later of neo-Darwinism, competition provided the very motor of evolution. For the same reason, it was essential to the course of progress. The poor, the starving and the diseased, who were identified with the unfit, could thus be cast by the wayside without moral scruple. As Spencer wrote, “The whole effort of nature was to clear the world of the (unfit) and make room for the better.”¹⁸ This is still the ethic of our modern market society. It is to be noted that it was also the ethic of Adolf Hitler who wrote “the law of selection justifies this incessant struggle by allowing the survival of the fittest. Christianity is a rebellion against *natural laws*, a protest against nature. Taken to its logical extreme, Christianity would mean the systematic cult of human failure.”¹⁹

The Reaction against Nature

Like Spencer, T H Huxley in the 1890s, Gaylord Simpson and Jacques Monod in the 1950s, and Edward O Wilson, Richard Dawkins and the other sociobiologists of today, also view the world as selfish, individualistic and aggressive. Thus T H Huxley, Darwin’s most celebrated disciple, wrote that “from the point of view of the moralist, the animal world is on about the same level as a gladiator’s show. The creatures are fairly well treated, and set to fight — whereby the strongest, the swiftest and the cunningest live to fight another day. The spectator has no need to turn his thumbs down, as no quarter is given.”²⁰

But unlike Spencer, Huxley believed that “the ethical progress of society depends not on imitating the cosmic process, still less in running away from it, but in combating it.”²¹ Indeed “social progress means a checking of the cosmic process at every step, and the substitution for it of another, which may be called the ethical process; the end of which is not the survival of those who may happen to be the fittest, in respect of the whole of the conditions which obtain, but of those who are ethically the best.” This ethical process he identifies with material progress.

The same anti-naturalistic view was expressed by Sigmund Freud, who saw the development of civilization as a systematic battle against man’s natural instincts. It was also that of Lester Ward. As Donald Worster notes, “Ward saw the way to progress and moral redemption in a systematic war with nature which above all meant ‘changing the competitive egoism that all men have inherited from their animal ancestors’.”²²

This is also very much the position of the sociobiologists who are particularly in vogue today. For them (like all modern neo-Darwinists) man is by nature an individualist and an egoist, his overriding preoccupation being the survival of his own genes. But this does not mean that we have to behave egotistically. Indeed, as Dawkins tells us, “We have the power to defy the selfish genes of our birth and, if necessary, the selfish memes of our indoctrination. We can even discuss ways of deliberately cultivating and nurturing pure, disinterested altruism — something that has no place in nature, something that has never existed

before in the whole history of the world. We are built as gene machines and cultured as meme machines, but we have the power to turn against our creators. We, alone on earth, can rebel against the tyranny of the selfish replicators.”²³

Elsewhere Dawkins tells us: “If you wish, as I do, to build a society in which individuals co-operate generously and unselfishly towards a common good, you can expect little help from biological nature. Let us try to teach generosity and altruism, because we are born selfish. Let us understand what our own selfish genes are up to, because we may then at least have the chance to upset their designs, something which no other species has ever aspired to.”²⁴

Gaylord Simpson and Jacques Monod put forward a broadly similar argument. For them, the most relevant aspect of nature is its randomness and purposelessness. “Man”, Gaylord Simpson tells us, “is the result of a purposeless and materialistic process that did not have him in mind. He was not planned.”²⁵ For Simpson, this has dramatic ethical implications. “The discovery that the universe, apart from man or before his coming, lacked any purpose or plan, has the inevitable corollary that the workings of the universe cannot provide any automatic universal, eternal, or absolute ethical criteria of right and wrong. This discovery has completely undermined all older attempts to find an intuitive ethic or to accept such an ethic as revelation. It equally undermines attempts to find a naturalistic ethic which will flow with absolute validity from the workings of nature or of evolution as a new revelation.”²⁶

Jacques Monod said much the same thing. “Since man has no role within the biosphere and is a stranger to it,” he wrote, “the biosphere cannot impose any values on man.”²⁷

What then is to provide us with an ethical inspiration? Presumably the technosphere or world of human artefacts — the product of economic development or progress.

The Evolutionists

This brings us back to Julian Huxley and C H Waddington who, as we saw earlier, went a long way towards developing a biospheric ethic. If they did not, it is because they accepted the “gladiatorial” view of nature that was prevalent at the time. They probably could not have done otherwise for this view was, and still is, at least among mainstream scientists, extremely firmly entrenched. Among other things, it underlies the Darwinist (and indeed the neo-Darwinist) theory of evolution, whose main features no scientist could then question without losing credibility among his peers.

Unlike T H Huxley, however, Julian Huxley and C H Waddington nevertheless believed, as we have seen, that it was only from nature that our ethical system could be derived. Furthermore, unlike the social Darwinists, they did not see this as implying that it had to be an individualistic and competitive ethic. On the contrary, they were firm believers in co-operation and harmony. Their position was thus a strangely inconsistent one, and their efforts to eliminate this inconsistency somewhat unconvincing. It involved arguing that both nature and human nature *were themselves subject to evolutionary change*, which they identified with progress and which they saw as tending in the direction of increasing harmony and co-operation. The argument is best expressed by Julian Huxley himself. He formally rejected his grandfather T H Huxley’s thesis that there was “a fundamental contradiction between the ethical process and the cosmic process.”²⁸ If the older Huxley believed this, “it was that

he saw the former as absolute and universal and the latter as occurring at a purely biological level.”²⁹

“Today,” Julian Huxley wrote, “that contradiction, can, I believe be resolved — on the one hand, by extending the concept of evolution both backward into the inorganic and forward into the human domain, and, on the other by considering ethics not as a body of fixed principles, but as the product of evolution, and itself evolving.”³⁰ Progress, an integral part of evolution, had made man less individualistic and less competitive and more co-operative and altruistic, and it was this co-operative and altruistic ethic that itself mediated “human evolution” or progress.

Thus although both Julian Huxley and Waddington regarded themselves as proponents of the biospheric or naturalistic ethic, by insisting that progress was part of evolution and that the technosphere or world of human artefacts was part of nature, they sought to justify the very process of economic development that is leading inexorably to the destruction, indeed to the very annihilation, of nature.

Such a position had previously been expressed very explicitly by Drummond, the American theologian, who insisted that “the path of progress and the path of altruism are one,” evolution being “nothing but the Involution of Love, the revelation of Infinite Spirit, the Eternal Life returning to itself.”³¹

This is also the position of the Nobel Laureate Ilya Prigogine, which he uses to justify the latest phase of technological progress — genetic engineering — which he sees as providing a means of achieving a new earthly paradise.

Thus, regardless of their differences, all the scholars I have referred to formulated an ethic that serves above all to rationalize and hence validate that Promethean enterprise which we popularly refer to as ‘progress’ and which gives rise to the ‘technosphere’ or surrogate world of human artefacts. One could refer to such an ethic as a ‘technospheric’ ethic and contrast it to what we might call a ‘biospheric’ ethic, an ethic whose role, in sharp contrast, is to rationalize and hence validate the preservation of the natural world on which we must ultimately depend for our survival.

Before we go further, it is worth considering the main features of the ‘technospheric’ ethic in some detail.

Morality begins with Man

A cardinal tenet of the ‘technospheric’ ethic — one accepted by all the scholars we have discussed so far — is that morality begins with *modern* man and that one cannot talk of primitive man, or of other forms of life, as being ‘moral’. Thus T H Huxley tells us that “society differs from nature in having a definite moral object; whence it comes about that the course shaped by the ethical man — the member of society or citizen — necessarily runs counter to that which the non-ethical man — the primitive savage, or man as a mere member of the animal kingdom — tends to adopt. The latter fights out the struggle for existence to the bitter end, like any other animal; the former devotes his best energies to the object of setting limits to the struggle.”³²

Although Julian Huxley, as already noted, saw progress as part of evolution, he insisted that it was an ethical process, which previous evolution was not. “The existence of man on earth,” he wrote, “introduced morality into the Cosmos in the same sort of way as it later introduced the so-called Laws of Nature. . . . Moral law does not exist until man appears, with his capacity for perceiving badness and goodness and for generalizing about right and wrong.”³³

The laws or customs of vernacular societies were observed not only because they had the moral force of having been promulgated by the ancestors . . . but also because they were seen as maintaining the order of the Cosmos.

Waddington took the same position: “It is only when we pass on from the sub-human world to deal with the evolution of man that ethics must, in its own right, enter the picture.”³⁴ In a similar vein, Simpson, who as we have seen saw progress as very distinct from evolution, writes: “There is no ethics but human ethics and a search that ignores the necessity that ethics be human, relative to man, is bound to fail.”³⁵

Purpose

Most of these scholars (Simpson and Monod, in particular) agree that evolution is a random, blind and purposeless process but insist that this is only true until man, or more precisely modern man, appears. Lester Ward also made explicit his belief that it is only with the appearance of man that there can be purpose. “If there is no cosmic purpose, there is at least human purpose, which has already given man a special place in nature and may yet, if he wills it, give organization and direction to his social life. Purposeful activity must henceforth be recognised as a proper function not only of the individual but of a whole society.”³⁶ Ward made a distinction between man-made phenomena that are the result of human purpose, which he called “telic” (from the Greek word ‘telos’ = ‘goal’) and natural or “genetic” phenomena, the result of blind natural forces.

Significantly Sir Peter Medawar also considered that there was no purpose without consciousness and that because only man was conscious, only his behaviour was truly purposive.

Knowledge

All those who share the ‘technospheric’ ethic are agreed that knowledge begins with man, or modern man. In non-human forms of life, and presumably among primitive people, there is only “experience”, whilst with modern man there is “education”. This makes all the difference, for according to Ward “the knowledge of experience is, so to speak, a genetic product, that of education is a teleological product.”³⁷

Monod and Simpson attach so much importance to knowledge that they actually preach an “ethic of knowledge” (Monod’s “éthique de la connaissance”). Monod sees this as being the only ethic possible for modern man. This ethical knowledge would differ from that of “animistic” man, by which he means primitive man, because the latter believes in teleology — a belief which, for Monod, is a hideous failing, since he sees it as the opposite of objectivity, which alone embodies what he refers to as “authentic” knowledge.

Monod’s “ethic of knowledge” is clearly an essential part of the ethic of the technosphere, since it is only through the type of “authentic” knowledge which he promotes as ethical that the technosphere can be built up. Julian Huxley is explicit on this score. “Knowledge is not merely an end in itself, but the only

satisfactory means for controlling our future evolution."³⁸ If knowledge is good, and its acquisition essential for assuring the march of progress, then it must follow that "social morality is seen to include the duty of providing an immense extension of research, and its integrated planning to provide the basis for desirable change."³⁹

Reason and Choice

A third feature of the 'technospheric' ethic is that it is only with consciousness, purpose, knowledge, and all the other supposedly unique endowments of modern man, that reason and choice emerge, without which there can be no morality.

Monod tells us that his ethic of knowledge would differ from

all other previous ethics in that it would have been adopted by an act of conscious choice. Simpson tells us that choice is morally good. "Blind faith" on the other hand "is morally wrong."⁴⁰

As knowledge builds up, our rational choices will change or rather "evolve." This means that our ethics must be flexible: they cannot be absolute or, for that matter, universal. Change, Simpson insists, is "the essence" of evolution and for that reason alone "there can be no absolute standard of ethics."⁴¹ Waddington also considered that the evolutionary ethic, as he saw it "cannot be expected to be absolute but must be subject to evolution itself and must be the result of responsible and rational choice in the full light of such knowledge of man and of life as we have."⁴² As already pointed out, this was also essentially the view of Julian Huxley.

Individualism

The 'technospheric' ethic is fundamentally an individualistic one. Simpson argues that even if we wished to derive ethics from nature, they would still be individualistic, for evolution tends towards individualization (as opposed to higher integration as ecologists once maintained). This individualization, Simpson regards as "good". Man must be aware of "the goodness of maintenance of this individualization" and he must promote "the integrity and dignity of the individual . . . Socialization may be good or bad. When ethically good, it is based on, and in turn gives maximum total possibility for, ethically good individualization."⁴³

Man has no duty to the state (which Simpson does not distinguish from 'society'). Those who suggest that he does are but the proponents of the "organic state," a notion used "to support authoritarian and totalitarian ideologies."⁴⁴ Individualism, on the other hand, Simpson associates with democracy. Democratic society, for all those who espouse the 'technospheric' ethic, is the product of the "social contract", that is, of purposive, conscious, rational choice based on scientific knowledge. Therefore it is "good". As William Graham Sumner wrote: "Contract . . . is rational — even rationalistic. It is also realistic, cold and matter of fact. A contract-relation is based on a sufficient reason, not on custom or prescription. It is not permanent. It endures only so long as the reason for it endures. In a state based on contract, sentiment is out of place in any public or common affairs. It is relegated to the sphere of private and personal relations."⁴⁵ The individual's duty to the state thereby ends when the contract is rescinded.

Julian Huxley and Waddington also accepted the ethic of individualization, but it was tempered with their knowledge that, in Huxley's words, "the individual is . . . meaningless in isolation," and, in Waddington's, that "a fully developed human being is inconceivable in isolation from society."⁴⁶ Nevertheless, according to Huxley, "fuller individualization is an evolutionary end; the developed human individual is the highest product of evolution; the experiences which alone have high intrinsic value, such as those of love and beauty and knowledge and mystical union, are accessible only to human individuals. . . yet a certain right organization of society is necessary as a means before those ends can be achieved."⁴⁷ This society, needless to say, Huxley sees as a man-made political unit. It is the United Nations that impresses him, since it may lead to the single world society.

For the sociobiologists only an individualistic ethic is even conceivable. The individual's overriding goal, for them, and indeed for those who have accepted the latest variants of neo-



The Biology of Freedom Krishna Chaitanya

"Philosophy once embraced both sciences and humanities but today the two disciplines have fallen apart into two cultures: the sciences now deny values and freedom, and the humanities have drifted to the same negation. If man and his values are to survive, there is no

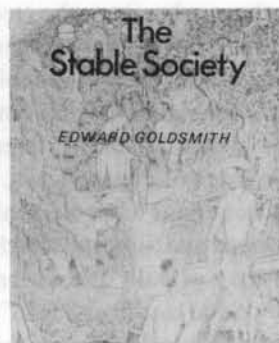
other option but to attempt a concept-by-concept reconstruction of the foundations of certitude."

In this the second volume of his acclaimed pentalogy on *Freedom*, Chaitanya analyses the philosophical basis of modern biology and looks at how our modern view of nature denies man his freedom and reduces him to a machine. His re-analysis of the true foundations of biology has been described as "a brilliant scientific tour de force".

The Ecologist has acquired a stock of this important book, which is now out of print. The books have been slightly damaged in transit and are therefore reduced from £10 to £4.

The Stable Society Edward Goldsmith

Today there is much talk of a 'steady-state' or 'stable society', but few have really considered how this would be achieved or what it entails in social, cultural and economic terms. In this important book, Edward Goldsmith looks at how stability is maintained in traditional human societies and considers the implications for modern society.



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Darwinism, is the proliferation of his own genes. The notion that this goal may, in the natural world, be subordinated to the more sensible goal of serving the interests of the community or the species or the ecosystem is considered unscientific, and those who suggest it, as does Professor Wynne Edwards, are mercilessly derided. The occurrence of altruistic behaviour, by which they mean all behaviour that tends towards satisfying the needs of any unit larger than the individual, is acknowledged, but is explained simply in terms of short term cost-benefit analyses, based on the principle that, on certain occasions, altruism provides the means of satisfying the individual's overriding goal of maximum gene-proliferation.

There is a terrifying consistency to such arguments, since, for "conscious" and "rational" modern man, supposedly bereft of a subconscious, of emotions, of feelings, of faith, and allowed no attachments save of a rational and contractual nature, no identity in a random, goalless world, or alternatively one immersed in an anonymous megasociety committed to perpetual growth, there can be no alternative to the individualistic ethic.

Man as the Only Source of Values

Since the modern ethic is the product of conscious choice, based on 'objective' and hence 'scientific' knowledge, it is sanctioned or authenticated by no external authority but that of modern man himself, endowed as he supposedly is with all his unique intellectual and moral gifts, and armed with the unique potentialities offered by scientific knowledge. Simpson tells us that "Man can cherish values if he wishes to,"⁴⁸ but they are his own, self-imposed values. No absolute ethics can be found "outside of man's own nature."⁴⁹ Monod is of the same mind "The ethic of knowledge," he writes, "would not be imposed on man. It is he on the contrary who would impose it on himself."⁵⁰

The evolutionists (Julian Huxley and C H Waddington) would of course only partly agree with this, but their differences would be minor ones. For them, progress or "human evolution", the latest phase of evolution, is principally the product of the development of mind, consciousness and reason and is a largely man-made process too. Modern man thus authenticates his own moral choices — although these are further authenticated, it is claimed, by being "natural" and because they reflect the fundamental direction of the evolutionary process.

All (except for Ward) agree that man must be subject to no constraints. He is free to do what he likes. Being equipped, what is more, with the limitless powers conferred on him by his intelligence, his consciousness, his mind, his reason and his scientific knowledge, man is now seen as being in the unique position of being able to influence — some go so far as to say determine — his own evolution. As Simpson writes: "Man for the first time in the history of life has increasing power to choose his course and to influence his own future evolution."⁵¹

Julian Huxley came to the same conclusion from a very different position. "In the light of evolutionary biology," he writes, "man can now see himself as the sole agent of further evolutionary advance on this planet, and one of the few possible instruments of progress in the universe at large. He finds himself in the unexpected position of business manager for the cosmic process of evolution."⁵²

Ilya Prigogine and his disciple Erich Jantsch go even further. For them, the key determinants of progress are "consciousness" and "mind", which needless to say only man is endowed with. It is because man possesses consciousness, Jantsch tells us that

"mankind is not redeemed by God but redeems himself."⁵³ The evolution of consciousness he then identifies with the evolution of the universe itself, which in turn he identifies with "self-organization". Such self-organization is marked by increasing "fluctuations" or discontinuities which are "good" because they give rise to "dissipative structures" which, roughly speaking, are the organized systems that make up the biosphere, but which, needless to say, are not distinguished from those that make up the technosphere (see *The Ecologist*, Vol. 11, No. 5). To subject man's conscious activities, in particular his super-star technologies such as genetic engineering, which Prigogine particularly favours, to any biological, social or ecological constraints would, it is argued, be distinctly immoral, since it would be interfering with the development of the very "dissipative structures" on which not only our material welfare but the very evolution of the biosphere is held ultimately to depend.

This may sound like a caricature of Prigogine's thesis but it is not. Indeed, Prigogine, Jantsch and their main followers in France, Belgium and elsewhere have built up an extraordinary cosmology for rationalizing progress and the super-star technologies that are to achieve its latest stages. These are legitimized by making them out to be natural processes that play a key role in the "self-organization" of the universe, and of course, by seeing them as the product of the consciousness, reason, choice and knowledge of a deified modern man.

Progress

Above all, the 'technospheric' ethic is an ethic of progress. As Julian Huxley writes, "Social organization should be planned, not to prevent change, nor merely to permit it, but to encourage it."⁵⁴

Progress is seen as a purposive process, inspired by conscious and rational considerations, based on what is taken to be objective knowledge. Certainly progress is viewed as the exclusive work of modern man. Whether progress is to be allowed free rein to satisfy the interests of commerce, as Spencer, Sumner and more recently Prigogine, Jantsch and others believed, or tightly controlled, as Ward maintained, so as to protect the individual from the worst abuses of the market, is neither here nor there. What is important is that all benefits are implicitly assumed to derive from the technosphere rather than the biosphere, and that ethical behaviour is thereby taken to be that which leads to the maximum technospheric development or economic growth.

A Biospheric Ethic

The 'technospheric' features which have been put forward as fundamental to a valid ethical system can be shown to be unacceptable. To begin with, we must reject utterly the notion that only modern man is capable of moral behaviour. This is just part of the myth that progress has somehow put modern man above nature. This is a pure dogma based on no serious considerations of any kind. Indeed, if by moral behaviour, we mean merciful, kind and altruistic behaviour, then there is absolutely no evidence that non-human animals do not behave morally. Conrad Lorenz describes in great detail how all sorts of non-human animals are capable of behaving in this way, although he too seems to accept the scientific dogma that only humans are moral, regarding such behaviour in non-human animals as "analogous to true morality".⁵⁵ Nevertheless he writes: "Nobody

with a real appreciation of the phenomena under discussion can fail to have an ever recurring sense of admiration for those physiological mechanisms which are in force in animals, (producing) selfless behaviour, aimed towards the good of the community and which work in the same way as a moral law in human beings.”⁵⁶

We must reject too the preposterous view that only modern man is capable of purposive behaviour, which is one of the justifications for the dogma that he alone is moral. This is yet another device for rationalizing the dogma of progress, which is seen as transforming a random, chaotic world into an orderly and purposeful one. Indeed, the more we learn about the biosphere, the more orderly and purposeful it appears to be and the more difficult the dogma of randomness is to sustain.⁵⁷

We must also reject the notion that only modern man's behaviour is based on conscious choice rather than on belief or faith. Again, this is simply another means of rationalising the dogma of progress. There is no reason of any sort for suggesting that non-human forms of life are incapable of conscious choice. In any case, such choices are, in both human and non-human animals, largely illusory. Motivation research, largely undertaken by the advertising industry, has revealed that the reasons advanced by people for explaining a behavioural act are largely rationalizations designed to make the act appear to be based on conscious and rational considerations.

Moreover, to maintain that behaviour is only truly ethical if it is based on conscious choices is irreconcilable with the view of ethics as providing the general non-plastic instructions that will assure the continuity or stability of a society's behaviour pattern. For, if these instructions are to be non-plastic, they must be believed in, indeed, regarded as self-evident, not just derived from *ad hoc* conscious choices. If they were, then they would give rise to a highly unstable social behaviour pattern, and hence a society with no continuity or stability.

As we have seen, Waddington sees such basic instructions as accepted without question, as an act of faith rather than by the conscious or rational choice of an “authority acceptor”. This he saw as essential for maintaining what he calls the “socio-genetic continuum”. Clearly too Matthew Arnold's “something not ourselves that makes for righteousness” must be a faith of some sort — faith in the sanctity of something we regard as holy and from which we can alone derive our ethical system.

We must reject too the associated idea of an “ethic of objective knowledge.” Objective knowledge is seen by science as being above all knowledge that has been insulated from subjective values, but as we know today there can be no such thing. Even if there were, as Popper has pointed out, we are not designed by our evolution to entertain such knowledge. It has no role to play in the strategy of nature. Even if it had, how could we possibly be imbued with the ethic of value-free or ethic-free knowledge — the ethic, in fact, of not having an ethic?

We must reject too the notion that ethical behaviour must favour “individualization”. The natural world, as already noted, is highly organized. It is a vast co-operative enterprise, capable as Jim Lovelock has shown, of maintaining its homeostasis in the face of environmental challenges. An atomised or individualized biosphere is a sick biosphere, one that has disintegrated, as ours is doing under the impact of economic development or progress. The same is true of an atomised or individualized society. The alienated members of such a society have lost the power to govern themselves and must be run by a government and a vast associated bureaucracy, for which, when living in a healthy and structured society, they have no possible need. The ethic of

individualization is thereby the ethic of ecological and social disintegration.

We must reject too the notion that ethics must be purely our own and not derived from anything larger than ourselves — such as our society or nature itself — and hence that man is free to determine his own evolution and need submit to no social or ecological constraints. This view may be consistent with Simpson and Monod's view of man as a stranger in a random world in which he has no role of any kind to fulfill. It may be consistent too with the neo-Darwinian, and hence the sociobiologist's, view of man as the supreme egoist, whose only role is to assure the proliferation of his own genes. But this paradigm is now under ever more serious attack across a wide front, and is increasingly difficult to reconcile with our knowledge of life processes within the biosphere.⁵⁸

Finally, we must reject the ethic of scientific, technological and industrial progress, an ethic which all the values we have considered serve above all to rationalize and hence to legitimize. Progress, or the economic development with which it is equated, involves the systematic substitution of the technosphere or man-made world for the biosphere or natural world or living world from which it derives its resources and to which it consigns its ever more voluminous and ever more toxic waste products. As the technosphere expands so must the biosphere disintegrate and contract. Economic growth, in fact, is a measure of biospheric disintegration and contraction. The two processes are but different sides of the same coin. This means that the ethic of progress — in effect, the ethic of perpetual technospheric expansion — is in reality no more than an ethic of biospheric destruction. It is not an “evolutionary ethic,” as Waddington and Huxley saw it. On the contrary, it is an *anti-evolutionary ethic*. It serves to sanctify the reversal of the evolutionary process.

Gaian Morality

A biospheric ethic, an ethic compatible with the ecological view of the world we live in, would be very different from that proposed by the scholars whose writings we have considered. It would above all be one which enables man to assist in the achievement of Gaia's overall goal of maintaining the biosphere's stability or homeostasis in the face of change, whereas immoral behaviour would be that which reduced Gaian homeostasis and hence that which disrupted the basic structure of the Cosmos.

This was undoubtedly what ethical behaviour was taken to be by the vernacular societies of the past. The laws or customs of such societies were observed not only because they had the moral force of having been promulgated by the ancestors in the “Dawn Period”, as Radcliffe Brown refers to it,⁵⁹ but also because the behaviour that conformed to them was seen as maintaining the order of the Cosmos. So long as that order was maintained, then man prospered: if it were perturbed, if, in fact, “the Balance of Nature” were upset, then disaster inevitably followed.

Vernacular man's fundamental role in life was thus to maintain the order of the Cosmos, which he saw himself as doing by performing the prescribed rituals, taking part in the prescribed ceremonies and in general by observing the traditional law of his society. This law he took to be a moral law and one which applied not only to man and the society to which he belonged but also to nature and, indeed, to the Cosmos itself.

Father Placide Tempels in his celebrated book *Bantu Philosophy* notes: “Moral behaviour for the Bantu is behaviour that

serves to maintain the order of the Cosmos and hence that maximizes human welfare. Immoral behaviour is that which reduces its order, thereby threatening human welfare. . . .⁶⁰ This statement could apply equally well to vernacular societies in all parts of the world. In many of these societies, the pattern of behaviour that is judged to be ethical was referred to by a word that both denotes the order of the Cosmos and, at the same time, the 'path' or 'Way' that must be followed in order to maintain it. Among the Ancient Greeks the word used was 'Dike', which also meant 'righteousness' or 'justice'. The Chinese 'Tao' is a very similar concept which refers to the daily and yearly "revolution of the heavens". According to de Groot, Tao "represents all that is correct, normal or right in the universe; it does indeed never deviate from its course. It consequently includes all correct and righteous dealings of men and spirits, which alone promote universal happiness and life."⁶¹ All other acts, as they oppose the Tao, are "incorrect, abnormal, unnatural" and they must "bring misfortune on the bad." The Buddhist notion of "Dharma", the Persian "Asha" and the Vedic "Rita" are very similar concepts: all refer to the Way that man must follow if he is to maintain the order of the Cosmos, the only Way that is truly moral since to maintain it is to assure the welfare of the world of living things, while to divert from it can only cause disasters like floods, droughts, epidemics and wars.

Although many tribal peoples do not appear to have formulated the notion of the Way in so explicit a manner, their notion of morality remains the same. Moral behaviour is still that which conforms to the traditional law and which, at the same time, serves to maintain the order of the Cosmos; immoral behaviour on the other hand, is that which is taboo. "An act is taboo," Roger Caillois writes, "if it disrupts the universal order which is at once

that of nature and society . . . as a result the Earth might no longer yield a harvest, the cattle might be struck with infertility, the stars might no longer follow their appointed course, death and disease could stalk the land."⁶²

Conclusion

Clearly in terms of this criterion, there can be no more truly immoral enterprise than that to which our modern society is so totally committed: namely, economic development or progress which involves the systematic substitution of the technosphere for the biosphere. Such "progress" must inevitably lead to the destruction, indeed the annihilation, of the world of living things. Indeed, the floods, droughts, epidemics and other massive discontinuities, whose seriousness is increasing every year, are but the symptoms of this destruction; they are the price to be paid for the immorality of the economic policies to which we are committed.

The only way of reducing the severity of these discontinuities is to abandon these policies and seek instead to reconstitute, to the extent that this is still possible, the natural world that we have so irresponsibly destroyed. Indeed if we want to survive on this planet for more than a few decades, we have no alternative but to return to the Way — and hence adopt once more the biospheric ethic that it so faithfully reflects.

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Forestry In Thailand: The Logging Ban And Its Consequences

The total ban on logging in Thailand is a significant victory for environmentalists. However, if levels of tropical hardwood consumption in the country are not reduced, deforestation will simply be exported to other countries. Reforestation programmes will have to be closely monitored by environmentalists as big business is keen to move in with unsuitable eucalypt plantations.

The forest conservation movement in Thailand, which has been growing steadily in the last few years, achieved its most striking success so far on January 10th, 1989, with the approval by the Cabinet of Prime Minister Chatichai Choonhavan of a nationwide logging ban, possibly the first of its kind in the world.

The ban, which went into effect on January 18th, was the result of public pressure of three types. The first consisted of increasingly strident protests from rural villagers, particularly in the hilly north of the country, against the timber companies' destruction of catchment areas and traditional irrigation systems crucial for agricultural subsistence. The second was a campaign among conservationists and others against a 1988 Judicial Council ruling that unexpectedly reactivated logging concession agreements in some of the country's most important wildlife sanctuaries and other protected areas. The third (and most decisive politically) derived from the widespread public shock and outrage at deforestation-related mudslides in South Thailand in November 1988, which took the lives of hundreds and buried villages and farmland under metres of logs, uprooted trees, and sand.

Grassroots Movement

With the effects of decades of commercial forest exploitation increasingly threatening the well-being of the rural majority, historical conditions were ripe for the growth of a grassroots movement powerful enough to force the Government into defying the politically well-connected logging interests. By last year, with forest cover down to 18 per cent of the land area from 53 per cent in 1961, few Thais at any level of society had been able to shield themselves from recognition of the connections between deforestation, and erosion, floods, and drought. There was thus perhaps more potential for the growth of environmental politics than in countries such as Indonesia, Malaysia, or Brazil, where tree cover remains more extensive and the consequences of large-scale deforestation are less a matter of everyday experience for the population as a whole.

The Thai ban is not without loopholes which will facilitate a certain amount of cheating by timber firms for another year or so. And perfect enforcement will not be easy. Nevertheless, it will be reasonably difficult for logging companies to get around the ban, or to make exaggerated demands for compensation. Part of this is due to the specificity of the clauses of the laws themselves, some of which were modelled directly on environmentalist's suggestions. (One clause states, for example, that timber companies wishing to remove logs remaining in the forest must prove that they were legally felled prior to the ban; another voids pre-existing concessions in any forest gazetted as a wildlife sanctuary.) More important, however, will be the vigilance of the public and press, which will now have a green light to agitate against surreptitious activities by commercial loggers. Par-

liamentarians, army officers and other bureaucrats, for their part, in the foreseeable future will be reluctant to risk their political careers by openly trying to overturn the popular ban.

Switching to Other Sources

The victory over commercial logging is rapidly helping to bring other environmental issues to the fore. Since the momentum began to build-up to stop domestic logging, Thai businessmen and bureaucrats have been vigorously seeking new sources of timber for the country's thousands of sawmills from Burma, Laos, Cambodia, Malaysia, Indonesia, even the Ivory Coast. The challenge to Thai environmentalists is to suggest ways of reducing demand for tropical timber at home and to offer renewed support for forest conservation attempts abroad, in order to ensure that Thailand's forest problems are not simply exported elsewhere.

Multinational Involvement

Another challenge is posed by the incipient attempt of multinational corporations and their allies in international organizations to take more of a hand in the 'conservation' of protected areas. Taking advantage of the current climate of concern for tropical nature, many companies are mapping out ways of getting a lock on endangered genetic raw material in primary forests (as well as the knowledge of forest natives about its uses), so that it can one day be turned into patented agribusiness, pharmaceutical, or biotechnological commodities. Already, ambitious "biodiversity preservation"

"biodiversity preservation" plans are being drawn up for Thai and other Southeast Asian forests which will bring together bodies such as the World Resources Institute, Weyerhaeuser, European pharmaceutical companies, the Food and Agriculture Organization, the Consultative Group on International Agricultural Research, USAID, World Wide Fund for Nature, and various national governments. Grassroots-oriented environmental campaigners, who see risks both to democracy and to nature in allowing such organizations to take the control of the forests away from the local peoples who have the most interest in preserving, them are likely to have to reach an agreement quickly on how to handle this issue.

Eucalyptus Plantations

Environmentalists will also have their work cut out in preventing conservationist sentiment from legitimizing the seizure of community land by industrial wood companies. Now that logging is officially 'out' and reforestation 'in' in Thailand, both domestic and multinational corporations are rushing to plant fast-growing eucalyptus varieties on whatever land they can rent or buy, hoping to make large profits off paper-pulp or wood-chip exports. In this, they have the blessing of a government eager for foreign exchange and well aware that it itself does not have the resources to reforest the country.

Reforestation For Whom ?

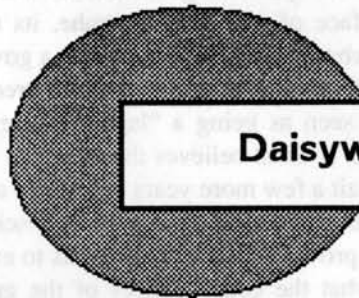
Thai villagers and environmentalists as a whole agree with the goal of reforestation, but want to know: reforestation by whom, with what, and where? Renting so-called "degraded" government forests to private firms for capital-intensive eucalyptus operations, tends to push squatters previously resident on the land to encroach on forest frontiers elsewhere, just as resettlement schemes are doing in Brazil and Indonesia. Without serious attempts at land reform, environmentalists warn, commercial 'reforestation' often only ac-

celerates deforestation. Many squatters are suggesting that they be allowed to keep their land, planting fruit or rubber trees on it for their own benefit and preserving nearby patches of natural forest for the good of the community. Noting that eucalyptus plantations provide few of the benefits rural Thais are accustomed to getting from their varied local forests (including fodder, firewood, mushrooms, game and red ant eggs for protein, herbal medicines, and resins), they point out that eucalyptus plantations overexploit local groundwater and spoil the soil for other crops and trees as well. Environmentalists add that in practice large-scale eucalyptus growers and contractors such as Shell (Netherlands), Siam Cement Company, and a number of Japanese paper interests, tend to promote

eucalyptus on large tracts of land which necessarily include patches of either natural forest or relatively fertile land better suited to more conventional crops and orchards.

So far, resistance to commercial reforestation with eucalyptus is confined mainly to environmentalists and villagers who have direct experience of it, particularly in seven or eight provinces in the northeast of the country. Given the current political climate and the deep-rooted conflicts over resource use involved, however, the movement has the potential of spreading more quickly than anticipated.

Larry Lohmann



Daisyworld

How can purely selfish life forms unconsciously create a system which controls the temperature of their planet ?

Daisyworld is a program created in answer to this criticism of the Gaia Theory. It is a simple model of life on a planet inhabited by various shades of daisy. It has a sun like ours which grows hotter with age. Initially it is too cold for life. As the sun warms up, seeds germinate. Darker daisies grow faster by absorbing more heat. Rapidly they cover and darken the whole planet so that everything starts to warm up and lighter daisies grow faster too

What happens next ?

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Books

The Green Door Out of the Greenhouse

THE HEAT TRAP: The Threat Caused by rising levels of greenhouse gases, by J.H.W. Karas and P.M. Kelly, Friends of the Earth, London, September 1988, £10, 126 pp.

THE GREENHOUSE EFFECT: Issues for Policy Makers, by David Everest, Joint Energy Programme Occasional Paper, London, October 1988, 38 pp.

CHANGE IN AN UNCERTAIN ATMOSPHERE: The impact of global warming and climate change, by Jim Berreen, The Green Party, London, February 1989, 33 pp.

The greenhouse effect is with us. The ever worsening worldwide climatic extremes and the global temperature rise of around 0.5° centigrade since the last century should be enough to convince us that the climate is in a state of unnatural flux. Indeed, the conservative Joint Energy Programme (convened by the Royal Institute for International Affairs and the Policy Studies Institute) predicts that firm evidence of the greenhouse effect will appear over the next decade, and possibly over the next two to three years.

Environmentalists no longer have to convince scornful scientists, industrialists and politicians that the global atmosphere is not a limitless dump for our wastes.

The language of the 'emotional' and 'doom-mongering' environmentalist has become the language of the politician and diplomat. At the recent ozone layer conference in London, Mustapha Tolba, Executive Director of the United Nations Environment Programme (UNEP) declared that "the life support system of our planet is collapsing" and British Prime

Minister Margaret Thatcher, that "major changes in the chemistry of the earth's atmosphere are taking place, with potentially calamitous effects for all mankind".

The issue is no longer what we are doing to our world, but how we are going to stop doing it.

No Conventional Solution

The now 'conventional wisdom' on the greenhouse effect is summed up by David Everest in *The Greenhouse Effect: Issues for Policy Makers*, which tells us that global warming is a major problem, but sadly has nothing to offer in the way of real solutions. Everest lists options for policy makers within the conventional politico-economic framework. He appears to believe that a policy of 'do-nothing-until-we-have-more-research' is an acceptable option for governments to take in the face of global catastrophe, its main drawback apparently being that a government's public image would be injured if it was seen as being a "laggard" over the issue. Everest believes that we only have to wait a few more years and spend a few more millions on research, and science will provide definite answers as to exactly what the consequences of the greenhouse effect will be. Unfortunately it is more likely that science will get its answers from empirical observations — watching the floods, droughts and famines take place. It is simply inadequate to claim that the high capital costs and long lead times of new power generation plant mean that sudden and politically-driven constraints should not be placed on particular fuels or power generation systems, for example on coal combustion or on nuclear power. On the contrary, these constraints must be imposed, as market forces which do not reflect externalities such as environmental destruction, are leading us ever deeper into crisis.

Intellectual Leap To Green Thinking

The obvious problem with present policy makers is their blind belief in the concept of 'sustainable economic growth'. The paradigm of modernism, of human advancement through technology, may be a little shaky at the edges, its followers may be beginning to realize that it has got us into a hell of a mess, but the intellectual leap to a Green way of thinking is too great

for them to be able to propose anything more than nuclear power and 'wait-and-see', or, at the most, a little tinkering with the system in the way of enforcing on the market some energy efficiency measures.

A worthwhile point raised in *Issues for Policy Makers*, is that the initial rise in atmospheric CO₂ levels after 1860 was probably mainly due to temperate zone deforestation, largely a consequence of the economic development of countries such as the USA. Everest therefore argues that it is politically difficult for the economically developed countries to attempt to stop current deforestation in the tropical zone, and so he concludes that measures to slow or reverse tropical deforestation do "not appear to represent significant means of limiting the onset of the greenhouse effect". This is idiotic. Surely, the conclusion we should draw is that it is time for us to admit our mistakes, to change our lifestyles to less resource-intensive ones, and then to say to the developing countries, do not go down the road we went down because it will lead to the ruin of us all.

Heat Trap

The Heat Trap, which provides an excellent introduction to the current state of scientific research on global warming, firmly demolishes the 'do nothing' argument.

The authors point out that accurate forecasting of the consequences of the greenhouse effect is impossible, especially on a regional basis. Predictions are always going to be wildly inaccurate, having to take into account not only the incredibly complex global climatic system, but also societal development, energy demand and supply, land use and industrial expansion. We are already committed to a warming of at least 1° centigrade (if the climate behaves in its predicted linear fashion) due to the time-lag between emissions and their effect on the climate, and a policy of not limiting these emissions until we have definite proof of a greenhouse effect is condemning us to disaster.

Kelly and Karas list some of the more obvious consequences of global warming such as species extinctions, flooding, diseases, and reduced and polluted water supplies. They predict that "the most pervasive impact is likely to be on food supplies", but fail to mention the consequences that this (and large scale flooding in densely populated areas such as the Nile and Ganges deltas) will have on

rest and international tensions, with massive numbers of 'environmental refugees' pouring over national borders. I believe that we can expect a number of 'environmental wars' over the next few decades.

Flexibility and Resilience

The inevitability of climate change renders a certain amount of adaptive change essential, although environmentalists must be careful that technical fixes do not become the main method of dealing with the problem, at the expense of minimising the sources of the pollution. Decisions on long-term irrigation, hydro-power, drought relief, agricultural land-use, structural designs and coastal engineering are being made on the assumption that past climatic data are a reliable guide for the future, but this is no longer the case. Karas and Kelly stress the need for an active awareness of the crisis from scientists, engineers, planners, politicians and citizens in all parts of the world, so that decisions can be made with the view of increasing flexibility and improving resilience to change. "Flexibility will increase options in the face of environmental change and resilience will reduce impacts whatever their nature may be." More important than planning for resilience and flexibility however, is planning to lessen greenhouse gas emissions. Cost/benefit analyses and environmental impact assessments must take into account the greenhouse potential of all large projects.

Karas and Kelly argue that changes in land use patterns, the selection of more appropriate crops, improved land management and, perhaps, the accelerated development of climate-independent food production techniques, are all needed if we are to weather the greenhouse effect. The biotechnologists will be quick to seize on this as an excuse for genetic engineering, and environmentalists must be ready to oppose this harmful technofix with as much vigour as they are opposing the nuclear option as a means of reducing CO₂ emissions. *The Heat Trap* quite rightly stresses that the Third World will be the least able to adapt to climate change, and that as the industrialized world is largely responsible for the problem, it is the industrialized world which must make the most drastic changes, and which must help the non-industrialized to implement the necessary adaptive changes and emission control measures.

The activities which create greenhouse gases are also responsible for the majority of our environmental ills — deforestation, land degradation and acidification, excessive use of fertilizers, the wasteful use of fossil fuels, and overconsumption by the industrialized world and the elites in the rest of the world. Reducing greenhouse gases would therefore be beneficial whether or not the greenhouse effect is seen as an immediate threat. Karas and Kelly state that "a broad approach to emission control is desirable because of the diverse sources of the greenhouse gases, and the combined effect of small gains may be significant...many of the activities which cause emissions of greenhouse gases are also implicated in other environmental and social problems. Control would bring a range of economic and social benefits, facilitating adaption as well as reducing greenhouse gas emissions."

Technological Fixes

The Heat Trap's recommended methods of reducing emissions, however, are too biased towards the technological approach. Vehicle exhaust emissions should, it is claimed, be reduced by more fuel efficient engines and catalytic converters, but there is little mention of the need to reduce the overall number of vehicles through improved public transport and changes in working patterns. The need is for more than just efficient appliances and energy production techniques: changes in society so that we demand less appliances and stop trying to buy happiness with ever more technological gadgetry are also essential.

It may be that conservation could reduce energy consumption by 20 to 30 per cent in the United States with "virtually no penalty for the way Americans live", but why should Americans be allowed to continue their obscenely resource-intensive lifestyles at literally the cost of the earth. A much larger than 20 to 30 per cent drop in American energy consumption will be needed to ensure us of a sustainable atmosphere.

Dangerous Assertion

The much-criticised World Bank/World Resources Institute Tropical Forestry Action Plan (see *The Ecologist* Vol. 17, No. 4/5) is cautiously endorsed by Karas and

Kelly on the grounds that "it is supported by many governments, and its merits should be considered in the context of the greenhouse problem." This is a dangerous assertion. Nuclear power has "merits" if "considered in the context of the greenhouse problem". Tropical forests need to be saved as much for the people who live in them and the protection of their millions of species as for the carbon which they contain. Contrary to a widely held belief, a mature forest does not take industrial carbon dioxide emissions out of the atmosphere but operates in a closed system. Only a newly planted forest is going to 'fix' CO₂. The logical thing to do with the tropical rain forests when considered solely within the parameters of the greenhouse effect is to cut the whole lot down and put up eucalyptus plantations in their place. It need hardly be said that this would be an unmitigated social and ecological disaster.

Nuclear Argument Demolished

The Heat Trap devotes a chapter to nuclear power and why it cannot significantly reduce global warming. The chapter makes extensive use of Keepin and Kats' excellent Rocky Mountain Institute paper, *Greenhouse warming, comparative analysis of two abatement strategies*, which although generous to nuclear power's economic and safety record in its calculations, effectively demolishes the nuclear argument: "even a massive worldwide nuclear power programme sustained over a period of several decades could not 'solve' the greenhouse problem. Even if it could, the Third World could not support an expansion of nuclear power on the scale that would be required in an attempted nuclear solution to greenhouse warming."

The Heat Trap ends with a number of Friends of the Earth policy recommendations. They endorse the call of the June 1988 Toronto conference, 'The Changing Atmosphere: Implications for Global Security', for a 20 per cent reduction from 1988 levels of carbon dioxide by 2005 and 50 per cent by 2015. A call is made for national carbon emission budgets to be established within an international agreement. Talks to establish this are likely to start within the next couple of years, probably under the supervision of UNEP, but it will take years for an agreement to be reached, and it is imperative that action be taken as soon as possible.

An important omission from the list of actions which can reduce emissions is a

massive reduction in military spending and arms production. A significant amount of CO₂ emissions are due to military activities. Governments and citizens must begin to realize that national security is meaningless without ecological security, and that the latter is totally incompatible with the squandering of massive amounts of the world's resources on preparations for war.

Reducing Demand

Change In An Uncertain Atmosphere, the British Green Party's policy document on the greenhouse effect, is weak on the scientific details, but correct in its analysis of what has caused the problem, namely the twin perils of economic growth and the population explosion which the pursuit of this growth has caused. "There is likely to be a major international disaster unless there is an adoption of the radical Green policy of reducing demand and productive output on a global scale. Such a solution is in direct conflict with the commercial self-interest promoted by governments, industry and traditional political parties alike."

Jim Berreen emphasises that now is the time for a radical reappraisal of social and political responsibility: "Further delay and procrastination merely removes the hope of a future for democratic freedom." He states that we must reduce our use of fossil fuels, not just to a level which will prevent the situation getting worse, but to a level that will allow the world's ecosystems to recover. This is important as UNEP are contemplating basing their emission reduction policies on an 'acceptable rate of climate change' of around 0.1° centigrade per decade. This is totally unacceptable. We are far too ignorant about the capacity of the ecosphere to soak up our wastes to consider any change to the equilibrium as 'acceptable'.

Berreen rightly insists that we must "reverse the dogma that increased human welfare is a function of increased energy use. That is patently untrue. Individuals must be encouraged to minimise their use of energy." Berreen asserts that the pressure for deforestation has come from the high income countries, which is mainly true, contrary to the 'peasants destroy the forests' theme of the Tropical Forest Action Plan. *Change In An Uncertain Atmosphere* is rather repetitive and wordy in parts, but is valuable for its conclusions, and there is no doubt that the Green parties worldwide are the only political parties

which have any idea as to the real nature of the crisis and what can be done about it. "In order to survive the irreversible damage inflicted upon the environment, we need to develop policies based on the principles of the Green Party. These are harmony with the planet, local production for local need, minimal use of energy and material, recycling and repair, decentralization of power, freedom of information and the regeneration of a healthy sustainable environment. Continuing to worship the lie of economic growth is killing the planet by degrees."

Climatic Flip

The possibility of a 'climatic flip' — a sudden worldwide change to an entirely new and unpredictable climate — is not addressed in any of this batch of greenhouse publications. However a 'flip' is consistent with theories of chaos which state that a natural system acts in a predictable way up to certain limits, and then, at a point which can only be confirmed by empirical experiment, becomes totally erratic. The evidence of the ozone 'hole' suggests that the atmosphere may well react in this fashion, and mainstream scientists studying the ozone layer have admitted that the 'unexpected' appearance of the hole renders their previous predictions virtually meaningless.

The reaction of the atmosphere to the rising levels of greenhouse gases during this century has not been linear, probably, Karas and Kelly believe, due to unknown feedback mechanisms or the natural variability of the climate system. Temperatures rose particularly rapidly during the 1920s and 1930s, stayed relatively constant during the 1940s and 1950s, and then began to rise rapidly again after 1970.

With the unlikelihood of conventional science ever properly understanding the dynamics of the global climate and its resilience to pollution, the time to act to reduce the life-threatening pollution is now. For governments to suggest otherwise is perverse, and reflects their total inability to see an alternative to the present dogmas of growth and the replacement of the natural world by the technological.

Patrick McCully

Agriculture's Organic Tradition

THE ORGANIC TRADITION: An anthology of writings on organic farming 1900 to 1950, edited by Philip Conford, Green Books, Bideford, Devon, £6.50, 224 pp.

Philip Conford's anthology provides an opportunity to survey the origins and development of organic farming in the words of its leading practitioners and advocates. The excerpts are well chosen and illustrate separate themes in the organic tradition. The book is worth buying for Conford's history of the movement alone.

In his incisive introduction, Jeremy Seabrook observes that "the green sensibility" goes back a long way — Columella (160-127 BC) protested that agribusiness was rendering nature infertile with its vast monocultural estates owned by absentee landlords: no artificial fertilisers, but few organic fertilisers either, Columella complained. He lamented that slave labour was taking the place of free men (today it is machines) and destroying the small farms on which the Roman Republic had been founded. So 2000 years ago we already have a dichotomy in attitudes to farming: one that it is a part of the community and nature; the other that it is a means of amassing wealth.

I was delighted that Conford describes John Macmurray, as an "organic" philosopher. I studied under him and he has been much neglected by orthodox philosophy and I look forward to a revival of his influence.

The "Organic Philosophy" is essentially holistic and is not satisfied with unrelated, simple ideas, such as increasing productivity and profit, without a consideration of environmental and social effects.

The husbandry which has been made 'orthodox' by the agricultural colleges, the National Farmers Union, the Country Landowners Association, the ancillary industries and the Ministry of Agriculture, is essentially a contributory part of the industrial revolution and, perhaps, the most significant symptom of its defects. This explains why it accompanies modern industry into every part of the world — with appalling consequences.

Conford begins his anthology with excerpts from Cobbett (1763-1835) who attacked the Whig economic system for

excessive stress on efficiency and mechanisation. What would he think now, when the Tory Party have adopted the old Whig economics in all their purity! Would his conservatism drive him into the Green Party?

Conford makes us aware that it is because the work of the soil-chemists, such as Leibig, was introduced into 'the system' that it was and is abused. Research into the chemistry of the soil was inevitable in a scientific age. It was quite proper to ask, how do plants feed? But fertilisers are a synthetic plant food based upon an inadequate soil/plant analysis. The first research was inevitably imperfect and resulted in high yields of nutritionally deprived crops grown on deprived soils. The organic movement developed to defend the wholeness of the soil and to research for means of feeding and increasing the 'living' elements on which the plant depends for a mature growth.

In the excerpt from *The Living Soil* — Lady Eve Balfour's pioneering work that inspired the foundation of The Soil Association — Balfour describes how she determined to lay the foundations for comparative research between organic, chemical and mixed farming, using the Haughley research farms generously lent to her by a sympathiser. The Haughley Farms — which no longer belong to the Association — served as a flagship and a community centre for believers like myself but were a great drain on its finances. Indeed, strict scientific research comparing one husbandry to another is probably impossible owing to the enormous number of biological factors involved.

I am glad that Conford has not shirked from mentioning the reactionary strain in the tradition. He observes that "the word organic has been used to describe the totalitarian states of our own age." When I joined the organic movement, I became uncomfortably aware that some of its admired figures had sympathy with romantic right wing attitudes. They were misled. Conford quotes Macmurray on this: "If the organic movement overlooks human freedom, organic practice must suppress it." We need to be aware of this. A totalitarian state can practise organic agriculture — but it is not organic in the full sense. If we remember 'wholeness' we must also acknowledge there is a sphere above the organic which Macmurray called the super-organic; it comprises the sphere of spirituality and free will.

Bob Waller

BOOK DIGEST

So many books are currently being published on ecological issues that we have decided to include a book digest as a regular feature in The Ecologist. Books which are covered in the digest may be given full-length reviews in forthcoming issues.

- **DAMMING THE NARMADA: India's Greatest Planned Environmental Disaster**, by Claude Alvares and Ramesh Billorey, Third World Network/APPEN, Penang, October 1988, 196 pp. Available from Worthyvale Manor Farm, Camelford, Cornwall PL32 9TT, £5.00 plus £2.50 postage and packing.

The authors give a detailed study of the impact of the Narmada dams (see Bruce Rich, this issue) and expose the large-scale manipulation and fraud that lead to the approval of the project. Also included are exclusive interviews with top officials of the Narmada Valley Development Authority, one of whom has now joined the opponents of the dams.

- **MODERN SCIENCE IN CRISIS: A Third World Response**, Third World Network/Consumer Association of Penang, Penang, October 1988, US\$4.30 (to Third World countries) US\$6.50 (other), 81 pp. Available from CAP, No: 87 Cantonment Road, 10250 Penang, Malaysia.

This short book is based on the declaration made at the Science Seminar in Penang in 1986. It discusses how modern science has brought the Third World increasingly under the control of the rich nations and suppressed indigenous scientific systems. The declaration demands the reconstruction of a holistic alternative science that respects life.

- **THE BATTLE FOR SARAWAK'S FORESTS**, World Rainforest Movement/Sahabat Alam Malaysia, Penang, 1989, 190 pp. Available from CAP as above.

This is the first comprehensive collection of documents and press clippings of the courageous fight of the indigenous peoples of Sarawak to save their forest homes, from the first barricades in March 1987, to the awarding of the Right Livelihood Award to Sahabat Alam (Friends of the Earth Malaysia) in December 1988. It is essential reading for anyone interested in the story of the barricades and the Government's repressive reaction to the natives' demands for their legal rights.

- **TOXIC TERROR: Dumping of Hazardous Wastes in the Third World**, Third World Network, February 1989, US\$9.00, 132 pp. Available from CAP as above.

A digest of articles and press clippings, *Toxic Terror*, describes the immoral export of the West's industrial poisons to the Third World. It provides recommendations on what Third World governments and peoples should do in future to minimize the risk of hazardous wastes, whether imported or locally produced.

- **GLOBAL DEVELOPMENT AND ENVIRONMENT CRISIS — HAS HUMANKIND A FUTURE?**, Asia-Pacific Peoples Environment Network/Sahabat Alam Malaysia, 1988, 802 pp. Available from CAP as above.

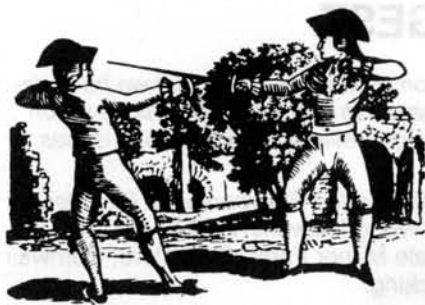
A comprehensive guide to the environmental crisis, this book contains the proceedings of a conference held in Penang in 1987. Its papers cover the whole range of ecological threats we are facing, and how NGOs and peoples' movements are fighting back against the industrial culture which is the source of these threats. The authors include the editors of *The Ecologist* and some of the world's leading environmental scientists and activists.

- **FOOD ADULTERATION AND HOW TO BEAT IT**, The London Food Commission, Unwin Paperbacks, London, 1988, £4.95, 295 pp.

A study of the sacrifice of real food for the profits of industry. The London Food Commission, Britain's independent food watchdog, lists the dangers from additives, nitrates, excess water, pesticide residues and food irradiation and suggests solutions. It challenges official policy and condemns official secrecy and calls for a major shake-up in Whitehall and the food trades, and for the establishment of an anti-adulteration alliance. All its arguments are backed with rigorous and detailed evidence.

- **THE CHANGING WORLD FOOD PROSPECT: The Nineties and Beyond**, by Lester R. Brown, Worldwatch Paper 85, Worldwatch Institute, Washington, October 1988, \$4.00, 58 pp.

An alarming overview of the threats facing global per capita food consumption in the next decade — a population growing at its fastest ever rate, soil erosion and degradation and a change in the world's climate. World food stocks are declining rapidly and another low U.S. harvest is more than likely. Brown argues that ministers of energy, with their influence over CO₂ emissions, and family planning bodies, are going to have more responsibility over future food security than agriculture ministers.



Letters

Relations with Mother Earth

Dear Sir,
I was astonished to receive my copy of *The Ecologist*, Vol. 18, Nos. 4/5. Was the title "Rethinking Man and Nature" tongue in cheek? Or a deliberate ploy to attract attention? Your entirely male cast of writers managed a couple of fleeting references to ecofeminism and otherwise assumed that we, the readers, would be 100 per cent male in our worldviews.

Deep Ecology and Social Ecology have both missed an entire dimension of human relations with Mother Earth. Capitalists are content to exploit the earth for their own ends. But the capitalist system relies upon and is supported by a further hidden 'free' gift — that of the 'mother economy'. Fifty per cent of total adult work undertaken in the capitalist world takes the form of unpaid work in the home (ILO). It can be shown that the capitalist world is well aware of the existence of this 'mother economy' which it consciously exploits to its own ends.

Yours faithfully,
Frances Hutchinson,
Keighley, West Yorkshire,
England.

The Ecologist chooses its articles on merit, not on the sex of their authors. Our list of authors was not entirely male — Robyn Eckersley is a female.

Animal Rights and Animal Responsibilities

Dear Sir,
Robyn Eckersley's article "The Road to Ecotopia? Socialism Vs. Environmentalism" (Vol. 18, Nos. 4/5) fills me

with a disquiet which I realize has existed semi-consciously ever since I became active in Green circles, and which has only now risen to the surface.

I do not dispute the conclusions reached in this article — that Socialist thought is blinkered in its attitude to the environment seems to me, a onetime Socialist, almost a truism. What worries me are the conclusions implied by the reasons which Greens give for their lines of argument.

Phrases such as "the preservation of wilderness for its own sake", and "human chauvinism", together with the idea of "animal rights" (not discussed here) appear to argue for two irreconcilable views of life. The first is that we are just like all other animals, and that therefore we have no mandate to lord it over them. The second is that we have a special responsibility to other life forms on account both of our self-awareness and of our other-awareness (that is, surely, that we are superior).

Which do we, as Greens, want? My own Greenness is based on clearly anthropocentric grounds. I think that the relationship of humans to the rest of the biosphere must be sound ecologically, for purely human-centred reasons — we won't survive otherwise. Thus I believe in the preservation of wilderness, but not "for its own sake", for mine. I see no meaning in the phrase "animal rights" since I see no equivalent "animal responsibilities" for them, in my view necessary corollaries to each other. Nevertheless, I believe that we have a responsibility towards other creatures, and deeply respect those who are willing and able to act (gently) in accordance with such beliefs.

I have come down on the side of anthropocentrism just because I am species-centred like other animals, and because it must be right to feel that what is *ultimately* good for man, rather than what is to his short-term benefit, is also good for the planet. I hope I have found some reconciliation of this paradox, but I see precious little sign of it among those who believe in both the means and the ends that I believe in.

Yours faithfully,,
Antony Griew,
Llangunnor,
Carmarthen,
Dyfed,
Wales.

Deep Antagonism

Dear Sir,
I read with great interest the contributions to Vol. 18, Nos. 4/5, yet was left with a feeling of regret that there seemed to be a note of real antagonism between the various schools of thought on deep ecology. Most readers of *The Ecologist* would probably agree that if the planet and its living cargo are still to be in existence in 100 years time, there will have to be general acceptance of a worldview, and of beliefs about the ultimate objects of human existence, different from those prevailing today. Whether the changes will owe much to conscious attempts to create them is debatable; if we look at the prevailing religions which incorporate a worldview and an eschatology, there seems little enough correspondence between the theologians' doctrines and the ways in which the religions influence day-to-day behaviour. The one certain thing, in the light of history, is that what evolves will be different from the expectations of the architects of change.

Meanwhile, many changes are urgent if we are to get through the next 20 years with the planet still in a sustainable condition. In the process of buying time, even the most narrowly 'green' views about choosing better technologies have a part to play, perhaps a bigger part in the short run, than the deeper changes. It is already economic for all filament light bulbs to be replaced by low energy lamps. If everyone who believes that things should be done in the most economic way changed over the moderating of the Greenhouse Effect could be noticeable.

For myself, the more I read of immensely elaborated worldviews, and the calls for us to look askance at Darwinism, not because it is demonstrably wrong in its picture of how Gaia might work, but because it is allegedly dreary, the more the debate seems to centre on the common-room coffee-cups; and the more I look forward to the next local Friends of the Earth 'paper mountain' to be reminded that many people, including some who would not dream of reading *The Ecologist*, have a natural feeling that it is wrong to waste things.

Yours faithfully,
Roy Cattram,
Penzance, Cornwall
England.

The Rape of Living Marine Resources

Dear Sir,

I would like to correct a couple of errors and add some relevant information to Sam Hall's article "Whaling: The Slaughter Continues" (Vol. 18, No. 6).

The IWC moratorium on commercial whaling does not "expire" next year, as the article claims. The moratorium is an indefinite one, requiring a three-quarters vote to overturn it; 1990 is merely the year in which it must be "reviewed". For conservationists who are not opposed to whaling in principle, on ethical grounds, the problem now is to establish the conditions under which the moratorium might at some time in the future be lifted. I suggest that these conditions should include a requirement for the installation in the Schedule to the IWC Convention (the formal regulatory document) of a tested revised management procedure.

Testing of five suggested procedures is now underway in the IWC Scientific Committee, using computer simulations. An interesting feature of these procedures is that none of them make any use of information of the kinds being obtained from the 'scientific whaling' operations now being conducted by Japan, Iceland and Norway! What they do require is the conduct of high quality visual surveys to count whales, continuously. These will be very expensive and diminish the economic interest in resumed whaling by those who have been accustomed to raping living marine resources without paying 'rent', and carrying out the minimum of research, and that mainly by peering into whale carcasses.

Although the whalers and governments especially of Norway and Iceland have been muttering about the need to carry on whaling (and sealing) to maintain "an ecological balance in the sea" they have not yet dared to put their facile arguments to rigorous examination in the Scientific Committee where they would be likely to be laughed out of court.

A more dangerous suggestion, in the 1990 review of the moratorium, will be that pending agreement on an appropriate new management procedure there should be some "interim quota allocations". This has already been tried, so far without success, by the Japanese, to get special treatment for their whalers in the northwest Pacific. But some governments in their anxiety to get rid of the political implications of the whaling problem — which include

the constant threat of economic sanctions from Japan — may be tempted to act on the suggestion. It is already being touted widely, most publicly by Dr. John Gulland in a recent issue of *New Scientist*. (Most strangely, *New Scientist* has refused to print any of the several rebuttals of Gulland's article offered by members of the IWC Scientific Committee.) Any acceptance of this idea will bring us right back to the bad old days of setting arbitrary quotas for the convenience of the whaling industry.

But we should be aware that resistance to demands for interim quotas will be countered by renewed threats by whaling countries to leave the IWC, again especially by the European members, and to enter into new regional agreements among themselves. A possible impediment to that is that such a move would be contrary to both the letter and the spirit of the Law of the Sea Convention to which Iceland, at least, is supposedly committed.

Sam Hall's article suggests that the US should enforce stronger economic sanctions against Japan. Unfortunately the time for that is long past; quite apart from the current political climate, the US fisheries policy of reserving most of the fish in its waters for capture by US vessels means that the further exclusion of Japan from those waters is not a credible option. In the face of a weakened US and an IWC which is strong on words but weak on deeds the only effective pressures on whalers are now coming from economic boycotts organised by citizens groups. Greenpeace has been notably successful in organising a boycott of Icelandic fisheries products which is certainly creating great tension within Iceland. Whether similar pressures can eventually successfully be put on Norway and Japan remains to be seen.

What I have written above applies to the World Wild Fund for Nature/IUCN/World Conservation Strategy approach to whaling. But perhaps it is time for other types of organizations to renew their past declarations of ethical rejection of commercial whaling. The recent Channel 4 film about Norwegian harp sealing surely alerted millions of people to the untrustworthiness of governments that profess to be 'green' as well as to what the eminent Soviet biologist, Alexei Yablokov, described as "the barbarism" of sealing methods. I would hope that when the Greenpeace video, made during their intervention against Japanese 'scientific whalers' in the

Antarctic, and showing the secret horrors of killing whales with explosive harpoons followed by electrocution, is publicly shown it will have a similar effect.

Yours faithfully,

Sidney J. Holt,

Scientific Adviser to the International Fund for Animal Welfare,
Città della Pieve,
Italy.

Logging in British Colombia

Dear Sir,

Thank you so much for the good work you are doing to save the rain forest. In British Colombia our rain forests are being logged at an alarming rate. The current method of clear-cut logging means that the logging companies go into a forested area with heavy equipment and cut everything, usually taking out only the choicest timber and leaving the area looking like a 'plucked chicken' with the dead timber strewn in tangled piles. Some areas are so unique that their wildlife inhabitants have no other haven to go to.

This type of logging causes much erosion. The soil on the slopes is left with no vegetation to hold it in place, and as a result many landslides occur which silt up streams and destroy salmon runs.

I often go hiking and climbing in the mountains and it makes my heart ache to see the devastating effects of logging on our mountainsides. These logged areas are such a mess that they are almost impossible to hike through. Please would it be possible for you to mention our rain forests here on the West coast of Canada when you approach the United Nations concerning the tropical rain forests?

Yours faithfully,

Mary Burgett,
British Colombia,
Canada.

Multinational Hit List

Dear Sir,

I read with interest the comments of your correspondents on the Save the Tropical Forests Campaign (*The Ecologist*, Vol. 18, No. 1).

The majority of contributions were thought provoking, frequently high-

lighting practical problems of implementation which are far from insurmountable.

However, certain comments of Rupert Sheldrake entirely miss the point. He regards the nuclear threat as the gravest crisis facing the biosphere. But this is a *hypothetical possibility* whereas the continuing destruction of the rainforests in the name of exploitative greed is an actual living reality every minute of every single passing day.

I've worked in Southern Chile and witnessed the firing of primary *Nothofagustemperate* rain forest, and the effects of non-sustainable cattle rearing. In the inter-tropical zones rain forest is disappearing at the rate of 1200 acres every hour.

With this realization I find it amazing that your correspondent should plea for more research for establishing plantations of trees selected for commercial as well as ecological value. This is tantamount to playing dice while Rome burns. The most urgent need is to check the continuing destruction of primary forest with loss of endemic species and extinction of tribal peoples. By colluding with the greed philosophies of existing rates of commercial consumption we are ourselves culpable.

My one criticism of the Plan for Action is that it doesn't swing its punches hard enough at the multinationals responsible for so much of the destruction of this unique ecosystem. For example, until recently the VW Corporation had vast ranching interests in Brazil where there was formerly forest.

Why not then publicize a hit list for environmentally conscious consumers of the multinationals directly or indirectly involved in rain forest destruction programmes? We, as individuals often feel powerless to halt this lemming-like genocide of natural forests. Life is about making choices and with power to make consumer choices based on ecological wisdom, the avaricious, less than ethical practices of specifically named corporations could conceivably be checked before it is too late.

Yours faithfully,
John Sears,
Egremont, Cumbria,
England.

Carbon-free Energy

Dear Sir,
What can individuals do about the

world energy crisis? We feel powerless but there are some steps we can take which although small in themselves do have an effect. If enough people were to follow them the world effect could be measurable. They are all things which do not depend on the activities of government. Mrs Thatcher says there is no such thing as society, only individuals and families. This is of course nonsense. Individuals can accomplish things by combining together in a number of suitable ways:

1. Insulation of houses to reduce total energy use.
2. Investment in solar energy collectors, even where the money cost is higher than competing fuels.
3. Use of public transport wherever possible.
4. Investment in cleaner transport.
5. Reduction of reliance on centrally generated electricity, with a target of reduction by 18 per cent (or whatever the nuclear proportion is).

Each of these has public policy implications but individuals in a freeish human market can do something about them, while calling for public policy changes.

I suggest the formation of a society or association of people who will agree individually and collectively to do things to adjust their energy use to reduce the production of harmful substances. *Society for Carbon and Nuclear-free Energy* might be a useful title (SCANFE).

Individually the members should agree to: look at their existing houses and reduce energy use by such things as insulation, wearing more clothes, reducing the power needs of apparatus such as refrigerators and washing machines and perhaps even changing habits such as heating particular rooms less. But it also means a determination to build wherever possible new houses with more radical energy-saving designs, such as south-facing windows, solar conservatories, solar water-heating (cheaper to build in than to retro-fit), and better insulation. And questioning the need to use a carbon-emitting car. What about a commitment to invest an annual sum in buying solar electricity equipment? If an average wage earner took ten per cent of his or her gas and electric bills and put it to alternative energy devices, after a few years he would have a useful kit which would reduce energy use.

Collectively an association can be like the Consumer Association and arrange to test all kinds of houses and domestic machinery for energy use and exert collective power in bulk buying some kinds of apparatus, such

as solar water heaters. Collective action might also mean funding research and development into such devices as: hydrogen storage for road vehicles (hydrogen can be derived from wind and solar electricity and would avoid carbon dioxide production); solid state cooling devices (which would abolish the need for CFCs in refrigerators and air conditioners and are already available to the military in missile systems).

A solar energy association with enough members could help fill the void created by the dereliction of the government, which has failed to support these activities.

The association need not be political (other than generally Green) and should concentrate on technical work rather than campaigning. One used to hear of people who wanted to hold back part of their electricity bills in protest at nuclear electricity. Much more practical and honest is to reduce the need for that kind of electricity by using less and generating alternatives. Photoelectric cells are coming down in price but the reduction could be speeded up by increasing the organized demand. In the long run the world's energy supplies can and should be supplied from solar farms in the Sahara and other desert areas with hydrogen as the medium of transport and storage.

Until a proper tax is put on carbon fuels, alternatives are likely to be more expensive, but this is a cost society as a whole ought to bear. Until the political will is generated to impose such a tax, individuals and groups can agree that it is right to spend more on energy, if that energy costs the earth less.

I would be happy to hear from anyone interested.

Yours faithfully,
George Matthews,
20 Brookside Road,
Wimborne,
Dorset BH21 2BL
England.

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CLEANING CONTAMINATED SOILS. Society of Chemical Industry and Water and Environment Group is holding a meeting on 29 June 1989 at 14-15 Belgrave Square, London W1. Information from: M.A. Smith, 68 Bridgewater Road, Berkhamsted, Herts HP4 1JB.

FAIR OF PRACTICAL UTOPIAS—EARTH held from 30 Sept to 8 Oct 1989 at Citta di Castello, Italy. For further information please write to: Karl-Ludwig Schibel, Villa Piaggia, I-05010 Montegabbione (TR), Italy.

International Conference: **IONISING RADIATION AND CANCER EPIDEMIOLOGY.** University of Birmingham, UK from 12-13 July 1989. Details from: Dr Tom Sorahan, Department of Social Medicine, University of Birmingham, Edgbaston, Birmingham B15 2TJ, UK.

Fourth Biennial Congress ON THE FATE AND HOPE OF THE EARTH to be held from 5-9 June 1989 at Managua, Nicaragua. Details from British Support Group E.N.N., 23 Beviden St. London N1 6BH, UK.

GREEN BOOK FORTNIGHT held at Chelsea Town Hall from 20-22 April 1989. This fair will promote a wide range of the best in green titles. For further information: Press Office, Sara Dunn, 121 Winston Rd. London N16 9LL. Tel: 01 241 4448; or Adrian Howe, Unit 403, Bondway Business Centre, 71 Bondway, London SW8. Tel: 01 582 6580.

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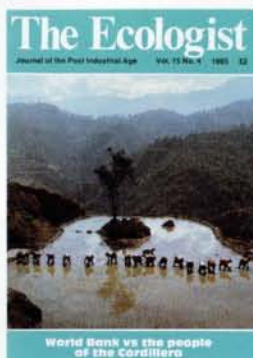
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