



Dirty Tricks: The Nuclear Lobby and Wave Power in Britain

Whose Common Future?

- TFAP's Road to Oblivion
- Sanctioning Resource Depletion
- Tribal Rights and Tea
 Plantations
- Gaian Sociology

Gaia and Evolution Proceedings of the Second Annual Camelford Conference on the Implications of the Gaia Thesis.

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The Ecologist

Published by Ecosystems Ltd.

Editorial Office: Corner House, Station Road, Sturminster Newton, Dorset, DT10 1BB, England. Tel (0258) 73476 Fax (0258) 73748 E-Mail gn.ecologist. Office Manager: Diane Platt-Higgins. Subscription Office: Worthyvale Manor, Camelford, Cornwall, PL32 9TT, England. Tel (0840) 212711. Subscription Manager: Maria Parsons.

Annual Subscription Rates

£18 (US\$30) for individuals and schools;

£36 (US\$60) for institutions; **£15 (US\$25)** for students and Third World citizens and groups.

Air mail £9 (US\$15) extra.

The rates above are for six issues including postage and annual index.

The Ecologist is published bi-monthly.

Subscriptions outside N. America payable to The Ecologist and sent to: The Ecologist, Subscription Office, Worthyvale Manor, Camelford, Cornwall, PL32 9TT. Tel (0840) 212711.

We welcome subscriptions with sterling or US dollar cheque or eurocheque, banker's draft payable through an English bank, international money order, postal order or banker's order. N. American subscriptions payable by check drawn on US banks in US funds to: **MIT Press** Journals, 55 Hayward Street, Cambridge, MA 02142, USA. Tel (617) 253-2889.

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Inserts:

Up to 265x185mm and not more than 10g.each: £40 per thousand plus 15% VAT.

Classifieds:

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Further information and full rate card from Diane Platt-Higgins at the Editorial Department (address above). Tel (0258) 73476.

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While every care is taken with manuscripts submitted for publication, the editors cannot guarantee to return those not accepted. Articles published in The Ecologist do not necessarily express the views of the Editors.

The Ecologist International Serial Number is: ISSN 0261-3131.

Printed by Penwell Ltd., Parkwood, Dupath, Callington, Cornwall, PL17 8AD. Tel (0579) 50522.

Computer output and equipment supplied by Windsorgraphics, Kings House, Kings Arms Lane, Ringwood, Hampshire, BH1 1AH. Tel (0425) 474936.

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The Ecologist is available on Microfilm from University Microfilms Int., Ann Arbor, MI, USA.

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The Department of Energy and the CEGB have stalled the development of the most promising renewable energy technologies to ensure the continued expansion of the UK nuclear industry. The control of renewable research and development must be taken away from the supporters of nuclear power.

Paved With Good Intentions: TFAP's Road to Oblivion

Larry Lohmann and Marcus Colchester

The National Forestry Plans completed under the World Bank/FAO Tropical Forestry Action Plan, confirm the worst fears of those who believed that TFAP ignored the true causes of forest destruction and could only accelerate deforestation. A study of the interests behind TFAP show that it is beyond reform and must be replaced by a process which allows local peoples to have the deciding voice in how their forests are managed.

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Charles A.S. Hall

Neo-classical economics only 'works' because it assumes the availability of massive quantities of fossil fuels. The application of mainstream economics to agricultural development makes food supplies ever more dependent on finite resources. When fossil fuel inputs are no longer available to farmers, soils will be impoverished and crop yields will be drastically reduced.

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Gram Vikas and Pradan

A tea plantation project in Orissa state will illegally dispossess tribal people of their land. The authorities claim that the tribals will benefit from the economic development which the plantations will bring. But the tribals refuse to become wage labourers on the plantations and stand to lose both their culture and their means of subsistence.

Social Symbiosis: Gaian Theory and Sociology

Alwyn K. Jones

Mainstream sociology implicitly supports the underlying competitive and materialist ethos of industrialism. However several theorists, notably Tonnies, Weber and Illich, have critiqued industrial society from a holistic, Gaian perspective and have stressed the importance of co-operation and community.

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Whose Common Future?

"Partnership is what is needed in today's world, partnership between government and industry, between producers and consumers, between the present and the future.... We need to build new coalitions. . . . We must agree on a global agenda for the management of change ... We must continue to move from confrontation, through dialogue to cooperation. We must . . . embrace the notion of sustainable development.... We see the possiblity for a new era of economic growth, a growth that is different, one that must be based on policies that sustain and expand the resource base. The time has come for a recommitment to multilateralism. . . . Collective management of global interdependence is ... the only acceptable formula in the world of the 1990s. . . . the close integration of environental concerns into our economies and into decision-making will continue to require political management and leadership at every level."

Gro Harlem Brundtland

"I feel pain and anger that our people, the indigenous peoples of this globe, have been so neglected in the mass rush towards what you now call development, but what you once, more honestly, called plunder.... I have heard grand talk of a new coalition of industry, scientists, governments and environmentalists from all over the world who will now finally work together to save the planet. But not once have I heard that indigenous peoples are to be included in this global alliance."

> Chief Ruby Dunstan Lytton Indian Band, British Columbia

"We don't believe that . . . ministers shall decide our future. Why should we believe that they, who have the power today, should want to change the world?".

> Gunnar Album Alstad Norwegian environmental activist

Never underestimate the ability of modern élites to work out ways of coming through a crisis with their power intact.

From the days of the American populists through the Depression, postwar reconstruction, the end of colonialism and the age of 'development', our contemporary leaders and their institutions have sought to turn pressures for change to their advantage. The New Deal, the Marshall Plan, Bretton Woods, multilateral lending — all in their turn have taken challenges to the system and transformed them into ways of defusing popular initiatives and developing the economic and political domains of the powerful.

Now comes the global environmental crisis. Once again those in high places are making solemn noises about "grave threats to our common security and the very survival of our planet". Once again their proposed solutions leave the main causes of the trouble untouched. As ordinary people try to reclaim local lands, forests and waters from the depredations of business and the state, and work to build democratic movements to preserve the planet's health, those in power continue to occupy themselves with damage control and the containment of threats to the way power is currently distributed and held. The difference is important to keep in mind when listening to the calls to arms from the new statesmen and women of 'environmentalism'.

Political Management of the Crisis

Two of the most prominent of these, former Norwegian Prime Minister Gro Harlem Brundtland and Canadian businessman Maurice Strong, newly-appointed Secretary-General of the 1992 United Nations Conference on Environment and Development (UNCED), were in Vancouver in March to reiterate the message that we all share a 'common future' in environmental preservation and 'sustainable development'. Their speeches at the 'Globe 90' conference and 'green' trade fair gave valuable clues about how the more progressive global élites are organizing themselves for the political management of the environment crisis.

The first instinct of those in high places when faced with a problem is to avoid analyzing its causes if doing so would put the current power structure in an unfavourable light. In Vancouver, Brundtland averted her gaze from the destruction brought about through economic growth, technology transfer and capital flows from North to South and vice versa, and instead rounded up the usual suspects of 'poverty', 'population growth' and 'underdevelopment', without exploring the origins of any of them. She spoke of global warming, a declining resource base, pollution, overexploitation of resources and a 'crushing debt burden' for the South, but omitted mentioning who or what might be responsible. Environmental problems, she implied, were mainly to be found in the South. Admittedly the North had made some mistakes, she said, but luckily it knows the answers now and can prevent the South from making the same errors as it toddles along behind the North on the path to sustainable development.

Whose Security?

The stress of a crisis also tends to drive those in power to the use of vague code words that can rally other members of the élite. In Vancouver the word was 'security'. Brundtland and Strong warned of the "new (environmental) threats to our security" and dwelt on the ideas of a 'global concept of security', a 'safe future' and a new 'security alliance' with an obsessiveness worthy of Richard Nixon.

What was all this talk of 'security' about? In the rural societies where most of the world's people live, security generally means land, family, village and freedom from outside interference. Had the ex-Prime Minister of Norway and the Chairman of Strovest Holdings, Inc. suddenly become land reform activists and virulent opponents of the development projects and market economy expansion which uproot villagers from their farms, communities and livelilhoods? Or were they perhaps hinting at another kind of security, the security that First World privilege wants against the economic and political chaos that would follow environmental collapse? In the atmosphere of Globe 90, where everyone was constantly assured that all humanity had 'common security' interests, it was not always easy to keep in mind the distinction between the first, which entails devolution of power, and the second, which requires the reverse.

A third instinct of crisis managers in high places is to seek the 'solution' that requires the least change to the existing power structure. Here Brundtland and Strong, as befits two contenders for the UN Secretary-Generalship, repeated a formula to be found partly in UN General Assembly documents relating to UNCED. This is:

(1) reverse the financial flows currently coursing from South to North, using debt relief, new lending, and new infusions of aid possibly augmented by taxes on fossil fuels and transfers from military budgets;

(2) transfer technology, particularly 'green' technology, from North to South; and

(3) boost economic growth, particularly in the South.

This scheme has obvious attractions for the world's powerful. For one thing, a resumption of net North-South capital flows would provide a bonanza for Northern export industries. Funds from the West and Japan would be sent on a quick round trip through a few institutions in other parts of the world before being returned, somewhat depleted by payoffs to élites along the way, to the coffers of Northern firms. Third World income freed up by debt relief would add immensely to corporate profits. Buoyed up by a fresh flow of funds, Southern leaders would become more receptive to the advice of Northern-dominated institutions and more dependent on Northern technology and aid. Injections of remedial technology, in addition, might well provide an incentive for the South to follow the strategy of dealing with the effects rather than the causes of environmental degradation. That would mean more money for both polluting and pollution-correcting industries.

The scheme also shores up the present industrial and financial system by suggesting that the solution to the environmental crisis lies within that system, or, in the words of Chief Ruby Dunstan, that "no basic change in consciousness is needed". It implies that environmental issues are technological and financial and not matters of social equity and distribution of power — discussion of which would call much of the system into question. The scheme invokes and reinforces the superstitions that it is lack of capital that leads to environmental crisis; that capital flows are going to 'expand the resource base', replace soil fertility and restore water tables and tropical forests lost to commercial exploitation; that poverty will be somehow relieved rather than exacerbated by economic growth; and that capital flows 'naturally' in large quantities from North to South.'

Weighing Up the Costs

Admittedly, the UNCED plan has costs for those in power. Bankers may not be overjoyed at the prospect of debt relief, but since the alternatives seem to be either continued insupportable and destabilizing South-North net financial transfers or the perpetuation of the process of servicing Third World debts with new loans, they may agree in the end. Northern countries will also have to spend massively on 'green' technology now in order to be in a position to put pressure on the South to do the same later.² But this is not necessarily a bad thing for industry, which can 'clean up' the mess it itself makes around the world, perhaps in the process creating new problems which will require further business solutions. As one of Globe 90's organizers put it, "a solution to most environmental issues is a business opportunity".3 Another obstacle to the UNCED scheme is that it may stir resistance among its Southern 'beneficiaries'. Raul Montenegro, a veteran of the struggle against Canada's transfer of nuclear reactor technology to Argentina, speaks for many in the South when he says, "We do not need technology transfer. We need exchange of sustainable technologies."

Perhaps a bigger problem for the UNCED scheme is that it does not actually address the environmental crisis in either North or South. By tailoring solutions not to the problems but to the interests of those who created them, the plan is in fact likely to make things worse. As Chief Ruby Dunstan put it, "business as usual will not and cannot ensure global survival. Sustainable development is about life, not about economics." The UNCED plan will reinforce Southern dependence on environmentally-destructive models of development imposed by the North and increase the power of Southern élites over their societies. It will promote technology most of which, like the tree-planting machine on display at Globe 90, has only a spurious claim to being 'green' and which will have to be paid for eventually by cashing in resources. It does not examine the effects of importing large amounts of capital into the South and endorses the continuing devastating economization of the natural and social heritage of both North and South. It is, however, probably as far as élites can go at present without challenging their own position. As for the future, there is always the hope that, as the brochure of one Japanese organization present at Globe 90 put it, the problems of global warming, ozone depletion, acid rain, desertification and tropical forest destruction can someday be solved "through technological innovations".4

The 'New Alliance'

A fourth tendency among élite crisis managers is to identify the executors of the solution with the existing power structure. This Brundtland and Strong did, but with an added twist that shows them to be real masters of their art.

The technical fixes of the UNCED agenda are to be promoted and implemented by a 'new global partnership' or environmental quadruple alliance consisting of industry, government, scientists and non-governmental organizations — "the most important security alliance we have ever entered into on this planet" according to Strong.

The composition of this projected alliance can probably be fairly guessed by glancing at the list of participants at Globe 90 itself. As one of the organizers put it, the event was "almost a working model of the kind of public and private sector partnership called for in *Our Common Future*".

Among corporate sponsors, advisers and exhibitors at the meeting were Atomic Energy of Canada, Ltd., notorious for the export of nuclear reactors and food irradiators to Third World countries; H.A. Simons, adviser for environmentally damaging plantations in Brazil and Southeast Asia; Dow Chemical; Mitsubishi; Esso; Imperial Oil; Hitachi; British Nuclear Fuels; B.C. Hydro; Weyerhauser; and a host of coal, electrical, nuclear, mining, oil, asbestos and paper and pulp industry associations. On the government side were official representatives from Canada, the US, Japan, West Germany, the UK, Austria, Norway, France, Finland, Italy, Australia, the Netherlands, Israel and Hong Kong. Various universities and institutes bolstered the scientific end, and representatives of the World Bank and Asian Development Bank were also present.

Seasoned observers looking over this roster may wonder what is supposed to distinguish the new environmental alliance from the familiar sort of élite ententes that helped land the world in its current environmental mess — the oldboy networks and clubs typified by the military-industrial complex, the World Bank's web of clients, consultants and contractors, the Trilateral Commission, and so on.

Co-Opting the NGOs

The answer is non-governmental organizations (NGOs). Although few NGO names appeared on the official sponsors list for Globe 90, great emphasis was laid on 'summoning' as many more as possible into the incipient global alliance. The Centre for Our Common Future, a small but well-connected Geneva-based organization, was delegated the responsibility of laying the groundwork for channeling NGO 'input' into the 1992 UNCED.

Why the interest in NGOs? One reason is that they might be used to push business and government in a slightly less destructive direction. Another is that official or corporate environmental initiatives need credibility. Establishment political strategists have not failed to note the growing role of NGOs in recent popular movements from Latin America to South and Southeast Asia and Eastern and Central Europe. By 1992, the strategists realize, UNCED will probably have to claim support from many such organizations in order to be able to make any credible claim of broad popular support — particularly if the other members of the 'new alliance' are notorious environmental offenders of the sort listed above. 'New alliance' leaders are thus courting and manipulating NGOs, particularly tame NGO umbrella groups, groups with establishment links, and groups with jet-set ambitions, in the hope of being able to use their names to say that UNCED initiatives have the backing of environmentalists, youth, trade unions, women's groups, the socially concerned and "all the nations and peoples of the world".

These manoeuvres, however, cannot conceal the fact that grassroots NGO 'participation' in UNCED and other 'new alliance' activities, to say nothing of the participation of ordinary people, is a fraud. That much should have been clear already from the wheeling and dealing on display in Vancouver and the spectacle of conference politicians from Ottawa or Geneva explaining glibly how 'grassroots participation' from the 'constituency outside government' could influence governments or be magically filtered upward through the complicated pipelines of the UNCED system. The General Assembly document setting out the role of NGOs, however, lays it out in black and white: the "form and manner of (NGO) participation in the preparatory process and in the Conference . . . can be determined in the light of the preparatory arrangements to be agreed upon by the (UNCED Preparatory) Committee". The NGO community is to be allowed at most to "enrich and enhance the deliberations of the Conference" and to "serve as an important channel to disseminate its results, as well as mobilize public support". Translation is hardly necessary. It is governments who decide who is allowed to say what, just as it is governments who will be signing agreements in 1992. NGOs are expected to carry governments' message to the people and help them stay in power.5

A Common Interest?

Outside official meetings, of course, it is business whose voice will inevitably carry above that of all others in the 'new alliance'. If Globe 90 is any indication, it is not likely to be a voice urging environmental and political sanity. Nor are grassroots-oriented environmental activists likely to be

excited about joining a coalition carrying the industry agenda put forward at the Vancouver conference. At the conference's opening plenary session, for example, Earl Harbison of Monsanto launched into an emotional defence of the need to spread the use of corporate-controlled biotechnology throughout agriculture. If technologies such as BST (see Samuel S. Epstein, 'BST: The Public Health Hazards', The Ecologist, Vol. 19, No. 5, September/October 1989) or crops genetically 'vaccinated' against pests are judged on their 'political acceptability', Harbison said, then "we are headed for trouble". The solution, he said, was to stop "polluting the scientific process with politics" - a recipe for technocratic dictatorship if ever there was one. Elsewhere, Adam Zimmerman of Noranda Forests phlegmatically defended his company's role in forest destruction in Canada, and a mining industry representative described coal as the 'solution to our energy problems'. The ideas of business about what 'sustainable development' might consist of, meanwhile, ranged from 'comfortable living' to 'scientific and technological innovation'.

Many environmentalists, nevertheless, will feel that joining the 'new global alliance' can do no harm if it presents an opportunity for nudging business and government in a more 'green' direction. Such a conclusion is questionable. It is one thing to pressure business and government into changing their ways with all the means at one's disposal. It is quite another to pledge allegiance in advance to a new élite coalition with a predetermined or unknown agenda which one will have little power to change.

Any alliance which tells us that we *must* seek consensus, that no opposition is to be brooked to Brundtland as Our Common Leader, or that there is a perfect potential community of interest between, say, a UN bureaucrat and a Sri Lankan subsistence fisherman, is one that deserves suspicion at the outset. Consensus- seeking is neither good nor necessary in itself — it may, after all, function merely to conceal exploitation — but only when it is agreed by all parties after full discussion to be possible and fruitful.

This is not to denigrate the ambitious professionals associated with the UNCED, but merely to state a fact. To seek genuine solutions it is necessary to accept, respect and explore differences, to face causes, and to understand the workings of power. It may well be that parties with wildly divergent interests can come to agreements on the crisis confronting the planet. Come the millennium, we may all even be able to form one grand coalition. But until then, it is best to remember the lesson of history: that no matter how warmly it seems to have embraced the slogans of the rebels, the Empire always strikes back.

Larry Lohmann

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5. United Nations General Assembly, A/CONF 151/PC/2, 23 February 1990, p.8.



Hinkley Point A and B reactors, Somerset. The Central Electricity Generating Board hopes to build a pressurized water reactor here as part of its highly controversial plans for the expansion of nuclear power in Britain. If environmentally-benign, economic alternatives to nuclear power are developed the industry knows that it will be even more difficult to justify its plans.

Dirty Tricks:

How the Nuclear Lobby Stopped the Development of Wave Power in Britain

by

Jim Jeffery

The UK Department of Energy and the Central Electricity Generating Board have slowed down wind power research and development and wave power has been deliberately sabotaged to prevent these renewable sources competing with nuclear power. The development of a wave power device which could produce significant amounts of electricity cheaper than could a nuclear plant, was stopped by a blatantly cynical campaign run by the authorities which control the research and development of both renewable energy sources and nuclear power in Britain.

The scandal of the lack of support given to renewable energy research and development in the UK, can only be understood in the light of the determination of the nuclear lobby to press on with Britain's nuclear programme at any cost, in spite of considerable public opposition. If benign renewable sources could be demonstrated as viable alternatives to the four pressurized water reactors (PWRs) which the Central Electricity Generating Board (CEGB) planned to come on stream in the 1990s, then Britain's plans to expand nuclear power would collapse.

In 1976, the Department of Energy (DEN) believed that wave power was "the most attractive of the renewable sources", while wind power was seen as being much less viable.¹ It was therefore in the interests of the nuclear industry to boost wind power as "a

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winner" (though not too vigorously or it might itself become the alternative to the PWR programme) and run down the prospects of wave power.² This the nuclear lobby did with great success, and in 1982 wave power research and development was closed down and wind power was established as the high priority renewable.

But, in spite of British firms with experience of building wind farms in California being prepared to take on contracts at £600 per kilowatt (kW) for 100 megawatts (MW) or more of wind power, the CEGB and the Department of Energy are restricting the development of wind power to three small wind parks of 8MW each, costing £800/kW. Although opinion polls show that a majority of people are very much in favour of wind generation, it is never mentioned by the CEGB or the Department of Energy without stressing the environmental problems which wind parks will cause, thus giving a further excuse for delay as objections to



The Duck developed by a team at Edinburgh University led by Professor Stephen Salter. Power is generated from the relative motion between the spine and the Duck. (source: ETSU)

particular sites hold up planning permission.³ With over 3000MW (more than the capacity of two PWRs) available in non-sensitive areas, it cannot be an accident that one of the CEGB's wind parks is sited in an Area of Outstanding Natural Beauty which is also a Site of Special Scientific Interest.⁴

A number of wave power devices suffered from the decision to close down wave research in 1982, but the documentation available is largely concerned with the device developed by Professor Stephen Salter at Edinburgh University and popularly known as 'Salter's Duck'. In simple terms this is a canister which bobs up and down on the waves like a floating duck, the resulting motion driving an electrical generator.

Professor Salter has never accepted the decision to close down wave research in the UK and has used every opportunity to challenge it. In 1989 he gave evidence to the Public Inquiry into the construction of a PWR at Hinkley Point in Somerset, which included and added to evidence he had previously given to a House of Lords Committee on renewable sources of energy.⁵ The following account is based on the Hinkley documents.

Sabotaging Wave Power

The consultants who had been appointed by the Department of Energy to help develop the various wave energy devices, reported in March 1982 that the design of the Duck was "near optimal in weight and efficiency, and . . . must be assessed in terms of the probability of success or failure *at the end of a significant development phase.*" They also believed that "essentially the engineering stands or falls on the feasibility of achieving a very consistent maintenance free life as indicated. Experts consulted are not prepared to discount the possibility that this may be achieved *if the necessary effort is made available*" (emphasis added).⁶ The consultants concluded: "Given the engineering means of realising it, the concept is hard to fault."

A unit cost of 5.5 pence per kilowatt-hour (p/kWh) was calculated for the cost of electricity from the Duck, and this was so close to the target set by the Department of Energy that for the first time it appeared that a renewable generating source might be developed to compete with nuclear power.

Although the Department of Energy is full of nuclear power protagonists, and those seconded to help the development of renewable energy sources did not always leave their nuclear commitment behind, the fir'st engineer in charge of the Duck project, Clive Grove-Palmer, was well disposed and gave helpful criticism to the Edinburgh team. He gave a paper to the June 1982 Conference on Wave Energy Utilization at Trondheim in Norway, which estimated the development potential for electricity from the Duck as 3p/kWh. This estimate, which was made well before the conference, together with the consultants' report, forced the nuclear lobby into action.

A meeting of ACORD (the Department of Energy's Advisory Council on Research and Development) was held on March 19th, 1982. In an extremely unusual move, Grove-Palmer, the programme manager, was excluded from the meeting. Instead, a secret report (published eight months later by ETSU, the Energy Technology Support Unit, which is based at Harwell, headquarters of the UK Atomic Energy Authority, and like the UKAEA is controlled by the Department of Energy) persuaded ACORD that wind power had more immediate possibilities of being economic than wave power, and that the required reduction of the renewable research budget from £14m to £11m a year would therefore have to be met by closing down wave power research.^{7,8,9}

It is unlikely that the argument was explicitly advanced that wind power development would be easier to hold back until the projected nuclear programme was pushed through; but it is equally unlikely not to have occurred to the nuclear protagonists present — and the whole of ACORD was committed to the development of nuclear power.¹⁰

This £3 million economy in renewable research — the ostensible reason for closing down wave research — was enforced at a time when the Department of Energy was spending £200m a year on nuclear research. Both wind and wave research could have been kept going instead of terminating the wave programme on an estimate of wind power economics which was as over-optimistic as the estimates of nuclear power have proved to be.¹¹

Writing Wave Power's Obituary

But worse was to come. Soon after the ACORD decision to close down wave research, Clive Grove-Palmer unexpectedly took early retirement. This step went unexplained for nearly eight years until Grove-Palmer was interviewed on television in February 1990 and the following exchange took place:

Grove-Palmer: We were called together two or three days before the ACORD meeting by the Energy Director at Harwell, and we thought we were going there for a briefing, and when we got there we were told that we weren't going to attend the meeting at all.

Interviewer: So, in effect you were excluded from that meeting?

Grove-Palmer: Yes, and at that meeting, that was where they cut the funding for the wave energy programme altogether.

Interviewer: What did you do after you were excluded from that meeting?



Grove-Palmer: I resigned ... Because they asked me to write the obituary of wave power. There was no way I could do that — I had been involved with it much too much.

Interviewer: And you think that obituary shouldn't be written?

Grove-Palmer: I'm sure it shouldn't, absolutely sure it shouldn't. We were just ready to do the final year of development and then go to sea.¹²

After Clive Grove-Palmer's resignation, Peter Davies was appointed to take charge of running down the research of all the groups doing wave power work. His devotion to the cause of renewable energy can be gauged from the fact that he was later chosen to present the Department of Energy's case at the Inquiry into the proposed expansion of the nuclear plant at Dounreay in Scotland.

When the report to ACORD, which the wave teams were not allowed to see for eight months, was finally released, the wave researchers began to realize what they were up against. In January 1983, a further report was published by ETSU, in which the best and worst estimates of the devices under study for wave power (4p/kWh and 12p/kWh) were averaged as the expected cost of wave power in general;¹³ and from then on this 8p/kWh average became the minimum, so that future documents quoted the cost of wave power as 8-12 (or more) p/kWh.

A March 1985 ETSU report, *Wave Energy* did have a section on 'The Special Case of the Duck', which admitted that it might produce energy at 5p/kWh, but it included the proviso that this would only be after costly development, and that "the economic attractiveness of wave energy is not at this stage mis-represented by the consultants' figures of 8-14p/kWh".¹⁴

Cold, Heat and Torpedoes

The Department of Energy's consultants (YARD), assessing the reliability of the Duck, analyzed its different components in detail, but left blanks against values for the reliability of most of them. These were filled in by estimates from the main consultants, Rendal, Palmer & Tritton (RPT), and the overall capacity value came out at nearly zero, which produced a very large unit cost for electricity from the Duck.

Most of these estimates were absurdly wrong. A Duck with no breakdowns would have a capacity value of about 40 per cent, and the whole emphasis of the design was to get within 10 per cent of this. Professor Salter spent much of 1983 disputing these reliability figures, winning the debate but without effect on the Wave Energy Steering Committee (WESC). He wrote a number of papers on the question.

A particularly important paper was sent to Peter Davies for transmission to WESC, but he prevented it from reaching the Committee.¹⁵ In this paper, Salter said that WESC and DEN should judge the soundness of the YARD work after seeing YARD's replies to 19 questions, all of which drew attention to some failure of the YARD reliability estimates or the ridiculous requirements imposed. Two of the questions are given below as examples:

"11. The sea temperature off the Hebrides varies between 8° C and 12° C over the year. Why do we need a temperature specification of 0-85°C,

a range 20 times wider than the true conditions? Why have more than 70°C been added to the top of the range?" "We must find a way of reporting accurate results to decision makers and have decision makers with enough technical knowledge to spot data massage if it occurs... this will be possible only if the control of renewable energy projects is completely removed from nuclear influences."

"17. The Tribology Handbook also gives data for underwater explosions which are in line with the 50g 'RMS' specified by YARD on page 2.5.

Are wave energy devices required to survive torpedo attacks?"

None of the 19 questions have been answered, and protests about the document being prevented from reaching WESC drew neither action nor comment from the Department of Energy. Any one of these 19 points would have made a responsible engineer or scientist realize that something was wrong with the way the wave research prospects had been evaluated.

Casting Unfair Doubts

Perhaps even more disturbing is the case of the consultants' report. The main consultants (RPT), who had little electronic experience, employed a sub-consultant, Gordon Senior, with special responsibility for Ducks. He was able to subject the team's ideas to a considerably more rigorous scrutiny than had been done before, and he sat in on meetings with potential suppliers. After many long meetings, it proved possible to hammer out almost complete agreement between Gordon Senior, the civil engineers at construction company John Laing, and the team at Edinburgh. Unfortunately for the team, many of Gordon Senior's conclusions were reversed by people in RPT who had not been present at the meetings and who had very little contact with the work.

Gordon Senior gave written evidence to the House of Lords Committee on renewable energy, in which he concluded:¹⁶

"The YARD report acknowledged the unique character of the device and the lack of relevant data and entered many caveats against a literal interpretation of its findings. Without these caveats I would have strongly disputed its validity.

"The Duck device was very novel and incorporated features which were new and untried. It was an imaginative device of the future using principles established today . . . While none of these (features) in themselves were novel the combination and the scale were quite outside conventional experience. Additionally all these mechanisms were encapsulated within sealed steel containers under permanent near vacuum conditions to provide an ideal working environment despite the exposure of the outside of the canisters to sea water. To assess the reliability of these mechanisms on data available for broadly comparable equipment exposed to sea spray (as $YARD \ did - author's \ note^{17}$) would be nonsense.

"My conclusions were the last part of the report to be formally drafted although my opinions had become well known to RPT as the work had progressed. My final draft of these sections was submitted in May 1983. I expected a response from RPT within days to discuss these consistent with our established practice. When this was not forthcoming I telephoned the RPT Project Manager to be told that the report had been completed, was to be submitted that night and could not be discussed. When pressed I was told that the conclusions had been altered. When I asked for a copy to examine what changes had been made I was told that no copy had been allocated to me and that copies were in short supply. When I pressed harder I was offered a copy on loan. I found that most of the text of the report was as I had drafted but the key conclusions had indeed been changed and even reversed. I objected and asked for my views to be made known to the DEN but was told that this could not be done and that I was bound by client confidentiality to RPT not to reveal my disagreement. I was also advised not to have further contact with the device team.

"It was and still remains my considered opinion that some of the conclusions in the report on the Duck device as submitted to DEN cast unfair doubts on its long term viability."

Decent Chaps

The Department of Energy, ETSU and RPT were asked for their comments on the evidence which Professor Salter gave to the House of Lords Committee and each responded with a letter. Professor Salter was given the last word, and justifiably commented that "The letters are remarkably silent on most of the points raised in my evidence and its appendices." He then proceeded to make devastating criticisms of each of the three in turn, listing the major points to which no reply had been given.

In his oral evidence to the Hinkley Point Public Inquiry, Professor Salter asked the Inspector to look at the replies from RPT and ETSU, and to ask himself if they had actually answered any of the points that he had made. He commented "All they are really saying is 'We are decent chaps and we wouldn't stoop to any dirty tricks like that', but there is abundant documentary evidence that that is exactly what they did do".¹⁸

The January 1983 ETSU report, which at the stroke of a pen doubled the lowest unit cost of the best wave device — the Duck — from 4p/kWh to 8p/kWh, was clearly not thought to be enough to ensure the definite closure of the wave research.

The next step was almost unbelievably bizarre. On the pretext of devising a system that would enable a simple comparison to be made of the capital costs of different renewable energy devices, the method of calculating the capital cost of the Duck was changed. The Duck had been costed on the basis of a detailed 140 page document, and by obtaining quotations against engineering drawings for all the bought in items. The official consultants prepared their own estimates, which were close, but a little higher. The Department of Energy's simple 'parametric' system replaced the 140 pages of detailed instructions with costings by weight, with just four different categories:

"Ballast costs — £50-100/tonne; Concrete structures cost — £400-600/tonne; Steel structures cost — £2000-4000/tonne; Mechanical and electrical plant costs — £10,000-20,000/tonne".¹⁹

Such a system may be simple, but almost any renewable energy device comes in the last category and the costings penalize the heavier devices.

In the Duck, which has to be heavy enough to only just float, the welded steel lining of the power canister, its contents and the concrete casing, together weigh 300 tonnes. The quotation obtained for the steel lining from the Heavy Engineering Division of Whessoe Ltd was £850 per tonne for the 180 tonnes of steel. The Department of Energy insisted that it be costed at £10,000/tonne in calculating the cost of electricity from a Duck. Most of the machinery and electrical gear inside the power canister, and the concrete casing in particular, cost far less than £10,000/tonne, giving an average cost for the whole Duck of about £1000/tonne. Nevertheless, the Department of Energy insisted that the whole 300 tonnes be costed at £10,000/tonne. This added £2.7 million to the capital cost of each Duck, and with other lesser absurdities pushed the unit cost up to the 9.8p/kWh in 1987 prices quoted by the CEGB at the Hinkley Inquiry.²⁰

Professor Salter commented on this in his oral evidence at the Hinkley Inquiry: "What is sinister about this incident is that nobody from either ETSU or from the DEN got in touch with Whessoe to say, 'We think it should be £10,000 a tonne, you say it is £850. We ought to get together and have a meeting and find out where the difference lies'. This tells me that they did not want the Whessoe number to be proven correct . . . They were not trying to get the truth; they were trying to support this policy of parametric costing and £10,000 a tonne."²¹

Faulty Cables

Possibly even more difficult to believe is the saga of the reliability estimate of the cables taking the Duck's electricity production to the shore collection point.²² If this cable has a fault, the Duck is out of action until the cable is mended or replaced. There should have been little difficulty in producing a reasonable figure from the worldwide experience with undersea electric cables. Norwegian figures showed that cable faults could be expected once in 625 years per kilometre of cable. The North of Scotland Hydro Electric Board has around 80 cables to islands off the coast, some of which date back to the 1930s without a fault; and their 43km cable to Orkney, which suffers similar waves and much worse currents than those of the Atlantic wave fields where the Ducks would be stationed, has achieved 300 kilometre years without a fault.²³

The consultants' first report in November 1980 gave details of the data that had been used and estimated reliability at 333 year kilometres. This was only half the Norwegian figure, but meant that for a 10 kilometre cable a fault on average would only occur after 30 years - more than the expected lifetime of a Duck. However, in May 1982, a second report by the same consultants reduced the reliability to one fault in 100-125 year kilometres, and in June 1983 the figure was reduced to 10 year kilometres. In the summary, which was eventually accepted as a double misprint, it was given as one year per kilometre. How the estimate of the same reliability figure could have come down from 300 to 1 in official reports, without the final ludicrous figure (a 10 kilometre cable failing every month) being queried except by the Duck team, remains a mystery, since no data or references were given except in the first report. Professor Salter was prevented from discussing the problem with the consultants, who had been told not to answer his questions by a Department of Energy official.24

Renewables and the Nuclear Lobby

Enough is enough. Why did this dreadful state of affairs come about? Why has all this waste of the time and energy of the high technology engineers been allowed to happen? We are throwing away the talent we are supposed to cherish in this age where we need them to deal with all the problems threatening the ecology of the planet. The saddest line in Professor Salter's evidence was the terse sentence: "The team dispersed at the end of March 1987."²⁶

It is clear that the Department of Energy, the UK Atomic Energy Authority and the nuclear engineers seconded to ETSU, did not want renewable energy, because they wanted nuclear power.²⁷ If Professor Salter had had sufficient support, and enough financial resources had been put into the construction of the Ducks, Britain could have been producing in the mid-1990s 1000 megawatts (almost as large as one of the planned PWRs) every two years.²⁸

Salter concluded his original Memorandum to the House of Lords Committee thus:

"We must not waste another 15 years and dissipate the high motivation of another generation of young engineers. We must stop using grossly different assessment methods in a rat race between technologies at widely differing stages of their development. We must find a way of reporting accurate results to decision makers and have decision makers with enough technical knowledge to spot data massage if it occurs. *I believe that this will be possible only if the control of renewable energy projects is completely removed from nuclear influences*" (emphasis added).²⁹

And in his examination by the Committee he declared that:

"I believe that the (British wave) programme was shut down because of inaccurate information supplied by officials at Harwell and by consultants working for Harwell who gave incorrect information to the decisionmakers. I think that we need to have an inquiry to expose what happened over wave energy, so that in future we can make better technical decisions. I am convinced, as a result of this, that if we want renewable energy to succeed in this country, we really must take control of it away from Harwell. We cannot waste any more time. We have wasted about 15 years. We cannot go on in the same way. We are going to need renewable energies too soon."³⁰

The chairman of the newly-set up state-owned generating company, Nuclear Electric plc, John Collier, straight from the chairmanship of the UKAEA, has clearly stated his ambition to build more nuclear stations in Britain. "That faith underpins all the goals I am setting for Nuclear Electric".³¹ Such faith is dangerous, and his faithful followers must be isolated from those who are (or could be) striving to develop benign renewable sources of energy.

References

1. Energy Paper Number 11, Energy Research and Development in the United Kingdom, 1976, p.27, Table 6 and p.33.

2. "The thrust of our programme is to back the winners. We are concentrating our resources on the most promising options." Ministerial statement on DEN programmes, July 1985, *RE News* 13, p.1.

3. 'Tilting at Windmills', The Guardian, 26 January, 1990.

 Ibid. Areas of Outstanding Natural Beauty and Sites of Special Scientific Interest are Government recognized conservation areas which are subject to planning restrictions.

5. Sixteenth Report of the House of Lords European Communities Committee on Renewable Sources of Energy, HMSO, London, 1988.

 Dept. of Energy, Wave Energy Steering Committee, UK Wave Energy Consultants' 1981 Assessment, Preliminary Information, March 1982.

 The report was published as ETSU R 13. ETSU (Energy Technology Support Unit) together with UKAEA are controlled by DEN and unless the context requires otherwise are called DEN, since the Department is ultimately responsible for what they do.

8. ETSUR 13 costs wind power at 2p/kWh and wave power at 4p/kWh, but the Wind Power figure is based on US manufacturers' advertisements, the Wave Power costs on adversarial consultants estimates.

9. Op. cit., supra 5, Minutes of Evidence, p.190, gives the budget requirement.

 Op. cit., supra 1. Nuclear Energy has 5 research items of highest overall importance, highest category for implementation and highest priority for UK involvement. There is no indication of ACORD disagreement.

11. ETSU R.13 gave a possible minimum of 1.9p/kWh, based on Boeing advertisements. US data from actual wind farms gave 15p/kWh even by 1985. See op. cit., supra 5, p.198.

'How the Duck was Sunk', *Scottish Eye*, Channel 4, 17 February, 1990.
ETSU R.14.

14. ETSU R.26.

15. Op. cit., supra 5, Appendix 6, p.197, 'Blocking by ETSU of Reports written for the Wave Energy Steering Committee'. Letter by Professor Salter to P. Davies, ETSU, together with Professor Salter's comments on YARD Memorandum 4961. These were not printed in the House of Lords Report, but were included in the Hinkley Inquiry document, DR 4, 'Proof of Evidence submitted by Professor Stephen Salter'; 'Comments on YARD memorandum 4061'

16. Op. cit., supra 5, p.203.

17. Hinkley Inquiry Transcript, Day 25, p.34C.

Ibid., Day 25, p.37G.
Op. cit., supra 5, p.19

Op. cit., supra 5, p.193.

- 20. Hinkley Inquiry document, CEGB 6, p.38, para.96.
- 21. Op. cit., supra 17, Day 25, p.36E.

22. Wave energy devices are either static and fixed to the sea bed or floating like the Ducks. The first group has a fixed termination at the device and a static cable to shore. The second has a flexible section going down to a nearby fixed termination on the sea bed, followed by a static cable to shore. The flexible sections are considered separately, and the reliability estimates apply only to the static cables. See op. cit., supra 5, p.183.

23. Ibid., appendix 5 (in full only in DR4).

24. Ibid., p.183.

25. Ibid., p.179.

26. Ibid., p.196.

27. A similar example was given in an interview with that great engineer Lord Hinton in January 1983, in which he discussed the history of the Steam Generating Heavy Water Reactor (SGHWR) in 1974. "The AEA were pushing the SGHWR. The CEGB were determined not to have it at any cost and wanted the PWR. The CEGB who were opposed to the SGHWR were given the job of preparing a design which produced an industrial scale reactor on the basis of the information that had been obtained on the Winfrith prototype.

"You see, if you give the job of preparing a design for a certain system to a body which is determined not to have that system, you are likely to get a proposal which is no damn good. That is exactly what happened" (Hinkley Inquiry Transcript, Day 156, p.102A-F; Inquiry Document S 1904, pp.17, 27).

28. The following is from Salter's cross examination at the Hinkley Inquiry: Salter: All I am challenging is this 9.8 (the nonsensical estimate in p/kwh of the cost of electricity from the Duck — author's note). If that collapses, than perhaps wave energy would be rehabilitated, which is what I want to do more than anything else ... if we had worked steadily from the 1970s, we really would have been in a position to be creating large amounts of wave energy before the end of this century ... We could be producing about two megawatts a day of wave energy if we were doing it in a steady-state production with everything going well. The Inspector: That is 700 (megawatts) a year.

Salter: You will have to be absolutely sure that it is going to be the right design before you do that, but that would not be difficult at all. Production rates of that on a tonnage basis were exceeded in the 1940s (Op. cit., supra 17, Day 25, p.38A-D).

29. Op. cit., supra 5, p.180.

30. Op. cit., supra 5, p.182.

31. Atom 399, January, 1990, p.2.

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The Tropical Forestry Action Plan is the development establishment's response to the accelerating destruction of the tropical forests. However its lack of recognition of land rights issues and its promotion of logging in primary forests can only exacerbate the destruction of the forests and the impoverishment of their inhabitants. (Photo: P. McCully)

Paved With Good Intentions: TFAP's Road To Oblivion

by

Larry Lohmann and Marcus Colchester

When it was launched, the Tropical Forestry Action Plan was hailed by the aid agencies and environmental groups which conceived it as the answer to the tropical forest crisis. National plans have now been drawn up under the TFAP process, and although they are shrouded in official secrecy, enough information is available to confirm the worst fears of those activists who opposed the Plan from the outset. The national plans are biased towards industrial forestry and forest-based industries and ignore the main causes of deforestation. Hopes that TFAP can be reformed are unrealistic and environmentalists should now be concentrating their energies on supporting the struggles of those who rely on the forests.

In 1985, when the UN Food and Agriculture Organization (FAO) and the World Bank unveiled their \$8 billion Tropical Forestry Action Plan (TFAP), the first reaction of many environmentalists was to breathe a sigh of relief. At last, it seemed, official development agencies had recognized the crisis of tropical deforestation and were set to do something about it.

As the details of TFAP became known, however, some independent observers began to criticize the plan as being both unrealistic in its approach to forest problems and dictatorial in its formulation and implementation. They accused the Plan of failing to come to grips with many of the main causes of tropical deforestation, including international development financing, industrial logging, commercial plantations, landlessness and unjust national land use policies. In addition, TFAP had been developed in almost complete isolation from local peoples, non-governmental organizations (NGOs) and the general public, and was strongly biased against ordinary people in the rural areas of the Third World, incorrectly blaming them for the forest crisis.1

Partly in response to such criticisms,

TFAP literature was soon taking pains to acknowledge that the causes of deforestation included not only population pressure for agricultural land and the demand for fuelwood and fodder but also:

"... skewed land distribution and insecure land tenure . . . unsustainable exploitation of forests for industrial timber production and export, and inappropriate government policies regarding land tenure, economic incentives, forest settlement, and other population issues . . . Commercial exploitation is a major cause of deforestation ... Large-scale development projects in agriculture and other sectors, including projects funded by international development assistance agencies, are major factors as well. As these and other

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What is the Tropical Forestry Action Plan?

The TFAP has been evolved over a period of years under the direction of the World Bank, the UN Food and Agriculture Organization (FAO), the United Nations Development Programme (UNDP) and the World Resources Institute (WRI). At present it is administered by a small secretariat in the forestry department of the FAO.

The aim of TFAP is to substantially increase investment in forestry in tropical forest countries. According to the lead agency, the FAO:

"Tropical Forests and woodlands are essential to the economic and social well-being of rural people in developing tropical countries. Yet they are being degraded and destroyed at an alarming rate. The causes and consequences are well-known but so, fortunately, are the solutions. More research is needed but lack of knowledge is no longer a barrier to action; the real obstacle is the lack of political, financial and institutional support to apply the solutions."

The TFAP envisages spending some \$US 8 billion in forestry over five years divided between five priority areas forestry in land-use; forest-based industrial development; fuelwood and energy; conservation and tropical forest ecosystems; and institutions. Regional targets

forces reduce the amount of available forest and arable land, poor farmers are forced to move into fragile upland forest areas and marginal lowlands that cannot support large numbers of people practicing subsistence agriculture ... To hold the poor responsible for this worsening situation is factually and morally wrong."²

Correspondingly, by 1989 TFAP planners were stressing the need for:

"... effective coordination of policy, planning and implementation of activities among the relevant departments involved in the primary use of land such as agriculture, livestock, forestry, mining, energy etc. and also with those involved in processing (cottage and industry) and commerce."³

This multi-sectoral, policy-oriented approach was to be supplemented by an attention to the "needs of local people, particularly the rural poor who depend on forest and tree resources for their subsisfor the investments were set in 1985 and restated in 1987 but have not been met.

To date, some 67 tropical forest countries accounting for over 85 per cent of all tropical forests have expressed an interest in participating in the TFAP process. Involvement then proceeds, ideally, through six further stages. In Phase 2, the FAO or another lead agency chosen from among the donor agencies - such as the World Bank, FINNIDA, CIDA, ODA (respectively the Finnish, Canadian and British government aid agencies) etc - carries out a reconnaissance mission to the host country to discuss government priorities (this is sometimes referred to as 'Roundtable 1'). An 'issues paper' outlining problems and priorities is then circulated. In Phase 3, a forestry review mission is set up. This usually incorporates foreign consultants, sometimes including representatives of first world NGOs, local government officials and staff from the lead agency. In Phase 4, the mission carries out a 'forestry sector review', over two or three months. The team's findings are then shared and discussed ('Roundtable 2') and then written up as a 'National Forestry Action Plan' in Phase 5. The document is then circulated to the main funding agencies. In Phase 6, a national planning seminar of government officials and funding agencies

tence and food security."4 There was a new emphasis on "active organized and selfgoverned involvement of local groups and communities in forestry activities, with a particular focus on the most vulnerable and on women and on commonly shared resources".5 In addition, new efforts were made to bring NGOs into the planning process by arranging 'roundtables' at which independent organizations could contribute suggestions. TFAP, planners insisted, might have got off on the wrong foot but at bottom was a flexible 'rolling process' which could continually accommodate revisions that would make it more effective and open.

Some 73 countries are now involved in TFAP, and nine National Forestry Action Plans (NFAPs) and eleven Forestry Sector Reviews (*see* Box) have been completed.⁶ Although little internal TFAP documentation has been made publicly available, the World Rainforest Movement and *The Ecologist*, in cooperation with Friends of the Earth UK, the Bank Information Center, the Rainforest Information Centre, the World Resources Institute and other is expected to identify which components of this plan will be funded. In **Phase 7**, the plan is actually implemented.

Until now, no country has run through the entire process and very few have strictly adhered to this idealized sequence. The involvement of NGOs varies considerably from country to country. Where there has been such involvement, it is usually confined to the final phases.

Day to day administration of TFAP is carried out by the secretariat at the FAO. The work is subject to the control of the two FAO committees, the Committee on Forestry Development in the Tropics (CFDT) and the Committee on Forestry (COFO). Six monthly meetings of a 'Forestry Advisors Group', an interagency group of foresters which includes several international NGOs, reviews progress but has no executive authority. Interim meetings of the 'core group' of the Forestry Advisors Group meet every other six months.

Due to widespread dissatisfaction, the Tropical Forestry Action Plan is presently being subjected to a five-monthlong 'independent review', which is due to be completed in May 1990.

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NGOs, have recently been able to obtain completed plans for nine countries — Cameroon, Colombia, Ghana, Guyana, Nepal, Papua New Guinea, Peru, the Philippines and Tanzania.⁷

The conclusion that emerges from an examination of these documents may surprise even some of those who have been critical of TFAP from the outset: the plan not only is failing dismally to meet its own objectives, but will actually accelerate the already catastrophic rate of forest loss worldwide.

Increased Logging

The Tropical Forestry Action Plan is facilitating a substantial increase in the financing of unsustainable forest projects. Most damaging of all would be the proposed massive expansion of logging, especially in those countries which have substantial remaining tracts of primary forest.

The Cameroon National Forestry Action Plan, for example, would "open up the closed forests of the south and south-east of the country, and put them to production purposes", so that the country can become the "most important African producer and exporter of forestry-based products from the start of the 21st century".⁸ It would finance, among other projects, a 600 kilometre highway from the Atlantic through the forest to Yokaduma to feed logs into the international market.⁹ The plan hopes that by the year 2000, log production—mainly by foreign companies — will have doubled from 1986 levels to four million cubic metres annually.

The Cameroon government itself admits that yields will not be sustainable, and the chances of Cameroon's weak forestry institutions keeping pace with the accelerated exploitation are slight indeed.¹⁰ Without the investment called for under the NFAP, forest would not be lost so quickly.

Peru's NFAP, meanwhile, describes the current management of logging areas as 'chaos' and notes that, "in practice the Amazonian forests are exploited in the same way as the mines of the Sierra".11 Yet it proposes an increase in logging in Amazonia of between 370 and 590 per cent, with the volume of timber production rising to 7.1 million cubic metres per year by the year 2000.12 No measures are proposed to control colonization along logging roads by landless peoples from the highlands of the country, and plans to improve institutional control over the logging are too weak to constitute more than a vague gesture in the direction of sustainability.

The NFAP proposed for Guyana, which will devote 62 per cent of a \$90 million budget to short term projects aimed at increasing timber production from primary forest and plantations, is certain to speed up unsustainable forest exploitation that would otherwise proceed very slowly.13 The current logging industry, which produces a mere 94,000 cubic metres per annum, is already overharvesting its concessions, and the staff of the national forestry department can be counted on the fingers of one hand.14 The increased exploitation envisaged under TFAP could not be regulated, and the increased debt burden which would follow from implementation of the NFAP due to the need to build new infrastructure for the logging industry, could only add to already considerable debt pressures for rapid timber mining.15

Papua New Guinea's prospects under TFAP are not much brighter. The country's TFAP Forestry Sector Review calls attention to 'totally inadequate' logging management and supervision, widespread flouting of legal restrictions, uncontrolled corruption and transfer pricing, and a lack of scientific understanding about what sustainable harvesting in the local context means.16 Nevertheless, the plan posits a 'conservative' provisional timber harvest figure of 3.6 million cubic metres, 80 per cent above 1987 levels.17 The planners apparently feared that mandating too low a harvest figure in the face of high expectations from the recent dizzying increases in timber extraction (about 600 per cent in the last decade), would unnecessarily deprive the country of revenue. Yet measures to correct the "lack of trained personnel" and resources - a few foreign experts, the training of small numbers of additional

forestry students, and the purchase of vehicles and equipment — fall far short of what is needed.¹⁸

Even in countries with little primary forest remaining, the TFAP proposes substantial investment to allow continued logging. The Ghana plan, which, according to the World Resources Institute (the Washington-based research body which was one of the organizations that conceived the TFAP), is "skewed to support industrial wood production", endorses a yearly cut of 1.1 million cubic metres to enable the country to continue competing with other West African countries in timber exports - despite a drop in forest cover from 34 per cent to 7 per cent in this century.19 In the Philippines, where primary dipterocarp forests now cover a mere 3 per cent of the country, the TFAP gives its nod to a brief period of further primary forest logging, relying partly on timber companies to monitor themselves, although their track record of self-regulation is abysmal.20

Colonization Unchecked

Another reason that TFAP will accelerate forest loss is that it consistently fails to address the single most important immediate cause of deforestation: the invasion of forest areas by landless or displaced settlers.²¹

As TFAP itself admits, the crucial driving forces behind forest colonization include inequities in land distribution, tenure and use, and disruptive pressures brought about by dam schemes, plantations, ex-



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port-orientated cash cropping and livestock and other development projects.²² Without a concerted attack on these inequities and pressures, colonization is likely not only to continue but to accelerate.

Yet, as a rule, the NFAPs simply pass over the issue of how the rural landless are to secure non-forest land on which they can defend sustainable livelihoods, and they refrain from any criticism of large development projects which displace villagers. By acquiescing to increasing pressures for forest colonization, NFAPs can only help speed up forest loss.

Some of the most striking examples come from the South American NFAPs. The Colombian plan notes that colonization is responsible for more than threequarters of current deforestation, which is now proceeding at a rate of about 6000 square kilometres per year.23 Most of this, according to Norman Myers, is rooted in problems of landlessness in the highlands of the country.24 Colonization has been promoted by government credits and subsidies for oil palm plantations and ranching, and clearance for coca has also played a part. Yet Colombia's NFAP not only does not seek solutions to these problems, but does not even mention them. Land tenure, land laws, and land ownership and reform are not discussed at all. Instead of relieving the pressure forcing ordinary people into unstable forms of land use, the plan hopes to redirect the landless into areas appropriate for agriculture or agroforestry, yet these can only be forest zones whose fertility and appropriateness for such activities is highly dubious.25 Alarmingly, the planners seem to be ignorant of the Government's recent action of granting title to 180,000 square kilometres of Colombia's Amazon region to its indigenous population (see Peter Bunyard, 'Guardians of the Forest', The Ecologist, Vol 19, No. 6, November/December 1989).26

Peru's NFAP, meanwhile, explicitly states that the colonization which has already destroyed 68,000 square kilometres of the country's forests is caused by poverty and landlessness in the highlands. These factors force people to clear lowland forests, mostly under government-pro-



moted 'special projects' centered on roads. Land title is given to people if they clear land, but 70-80 per cent of newly colonized land is abandoned every year, effectively making the titling law an incentive for deforestation.27 Despite this obviously unstable situation, the NFAP does not examine what causes poverty and landlessness and fails even to mention land laws, land distribution or land use in the highlands. No alternatives are offered which could stem the flow of the landless into the forests. Instead, the plan actually calls for an increase in the area under production in the areas being colonized, with no suggestion as to how the soils will suddenly become 'more productive'. The plan also advocates an expansion of the road network in these areas, even though the roads have been identified as the principal arteries for invasion and deforestation.28 In addition, the Peru plan's lack of proper attention to the needs and rights of Amazonian Indians ensures that they will also be displaced and forced into unsustainable livelihoods. This is likely to happen in Guyana as well, where the NFAP whitewashes the attack on Amerindian lands by mining companies and fails to examine the likely effects of its road projects in bringing in miners and colonists from Brazil.29

Ignoring Customary Rights

In Cameroon, the NFAP admits that agricultural occupation following logging has been a major problem in the north of the country, but does not say how villagers will be prevented from being lured into the forests along roads to be opened in the south under the plan. The plan contains no measures related to pastoralism and shifting cultivation, although it concedes that both are depleting forests.³⁰ The effect of logging on the livelihoods of the indigenous peoples (pygmies) who inhabit the deep forest in the south of the country is not considered either; yet their displacement can only exacerbate deforestation.

In Cameroonian law, nearly all lands belong to the state. Customary rights to tribal lands are not officially recognized, and are given short shrift when proposals for road building or logging concessions come up, with proper compensation rare. Even National Parks are defined without measures first being taken to extinguish customary title. Given that land tenure issues in the Cameroon are in such a shambles, it is hardly any wonder that "communities are not settled" or "provided with stable profits from the natural environment".31 Viewed in this light, the NFAP's decision to avoid the land question and stick to a "classical approach to the current problems of the forest sector to make the review easier" simply evades reality.32 Neglect of the issue dooms the forests without hope of appeal.

For Papua New Guinea, the NFAP deals extremely cursorily with landholding and land use issues, despite acknowledging rampant corruption and abuses of local landowners' rights by foreign concessionaires, local development corporations, and government officials. Several critics have noted, in fact, that the NFAP treats customary tenure primarily as an an obstacle to forest industry development, and does not deal adequately with the issue of landowner representation on policy-making bodies.³³ The result is bound to be increased displacement.

The plan for Ghana also gives short

shrift to land issues, devoting only oneseventh the funds to rural forestry that it allocates to industrial extraction.34 Problems of land tenure and security are not even recognized, much less resolved, and the plan does not bother to establish why encroachment is a problem in high forests before laying out its rural forestry projects. Its programme to "reforest underutilized savanna areas", also begs the question of whether farmers already use these areas and whether losing them to reforestation would lead to farmers clearing land elsewhere. Overall, the project "will not necessarily increase access to resources, alleviate poverty or alleviate the 'fuelwood crisis"", and it is thus unlikely to check forest colonization.35

Among all the NFAPs surveyed, in fact, only those for Tanzania, Nepal and the Philippines pay much attention to land rights and the local control of resources. The Tanzania plan, although it promotes a large expansion in wood products exports, correctly takes to task the governmentmandated pattern of resettlement and 'villagization' which has broken up tribal landholding traditions, and proposes a return to a more decentralized (though still imposed) system of village land administration.36 There is a welcome emphasis in the Nepal plan on returning local forests to the management of the people for their own use in accord with 'ancient right'; but land title will apparently remain with the government.37 The Philippines plan, for its part, also insists that the "prior rights" of "ethnic cultural communities" must be ensured. Unfortunately, however, it contemplates keeping logged-over forests under the management of the government and timber companies, and does not address land issues in areas outside the 14 per cent or so of the country's land area nominally classified as dipterocarp forest.38 Yet it is from precisely these areas that much future pressure from colonists is likely to come.

The national plans' do-nothing attitude toward land distribution and tenure is matched by their lack of criticism of large development projects, which also drive people into the forest. To take just one example, papers prepared for the NFAPs for Laos and Thailand fail to ask whether there are alternatives to the dam projects contemplated under a UN-backed plan for the Mekong basin (see Larry Lohmann, 'Remaking the Mekong', *The Ecologist*, Vol. 20, No. 2, March/April 1990).³⁹ Yet the dams will be a major cause of deforestation and displacement of villagers. National plans have also failed to criticize

"Correcting TFAP's bias toward the imperatives of national governments, multilateral development banks and forestry industries would require more than simply allowing people's groups and independent organizations to offer criticisms and reviews of national forestry plans. Only if TFAP planning were overseen by those ordinary people most affected by forest loss would the TFAP process have a reasonable chance of success."

large-scale cattle-raising or plantation schemes which add to settler pressures on forests.⁴⁰ This is yet another demonstration of TFAP's oft-noted failure to adhere to its stated commitment to an 'inter-sectoral' approach.

The Tropical Forestry Action Plan's neglect of the root causes of forest colonization is particularly dangerous given the plan's high hopes for sustainable timbercutting. Until and unless the problem of landlessness is solved, sustainable logging will prove impossible, as settlement along logging roads is bound to continue (see Marcus Colchester, review of *No Timber without Trees*, by Duncan Poore, this issue). The TFAP obviously has no idea how this might be achieved.

Technical Fixes

Several national plans imply that the jobs created through TFAP in forest industries or in agriculture will be enough by themselves to divert potential colonists from the forests. And the latest TFAP brochure speaks of how industrial forestry revenues can be ploughed into conservation, sustainable use, and meeting the "socio-economic needs" of people in tropical countries. There are also claims that TFAPpromoted plantations will relieve pressures on natural forests.⁴¹

So far, however, these proposals amount to mere flag-waving. There is not the slightest evidence that such attempts at 'technical fixes' will be able to delay for even a short period the time when the land issue must be tackled directly. Indeed, all the evidence suggests the opposite is true.

The number of people per square kilometre that the forestry industry can support in long-term livelihoods tends to be quite low worldwide. In Ghana, as Friends of the Earth has pointed out, the NFAP's measures to provide more fuelwood to help prevent forest encroachment would in fact supply less than 0.22 per cent of the fuelwood shortfall the plan itself projects for the year 2000.42 Moreover, the effect of NFAP-promoted logging on bushmeat and traditional medicine supplies are not explored, in spite of the fact that 75 per cent or more of the country's population relies on these forest products.43 Evidence from Malaysia and other countries shows that logging revenues in general go not to conservation or to providing secure livelihoods for local people, but rather to a few powerful figures.44

In general, NFAP planners do not seem to have bothered to find out to what degree NFAP benefits would flow to the landless and rural poor. Yet, if the landless do not benefit appreciably from NFAPs, and at the same time are threatened by logging, plantations and industries, the pressure on them to colonize forest can only increase. Indeed, by effectively postponing action on land rights, the TFAP's attempts at technical fixes can only add to the problem. A glance at the history of attempts to deal with poverty through similar technical fixes illustrates the hazards involved. As the voluntary aid agencies tackling world poverty have learned through painful experience, assistance programmes directed merely at increasing food production do not work. By failing to address the root causes of poverty in land ownership and other social, economic and political conditions, they only shore up the very mechanisms which perpetuate poverty.45 The result has been a well-documented increase in global poverty on a catastrophic scale. And so it is with the forests. Increasing production from the forests will not work if the underlying causes of forest destruction are not addressed. Control and ownership of the forests must be vested with those who live in them.

The Interests Behind TFAP

One reason why NFAP planners are reluctant to tackle issues of land tenure, timber extraction, development projects and debt repayment is that they feel that the institutions they have to work with will not permit these politically difficult topics to be touched.

It is known, for instance, that FAO staff

think that TFAP cannot address the land rights issue due to its sensitivity among national governments. Similarly, World Bank consultants working on TFAP are not likely to question income-boosting or debt-repaying logging, hydroelectric or plantation projects that the Bank itself is supporting. Nor are NFAP team members from large forestry firms likely to begin entertaining doubts about eucalyptus plantations or the political feasibility of sustainable logging.

Government development plans have proved particularly constraining for TFAP, straitjacketing its programmes in country after country. Cameroon's NFAP is said to 'supplement' the government's sixth national plan, which promotes wood harvesting and industrial complexes.46 In effect, it responds to the timber industry's desires for more concessions to supplement the ones it has depleted in the west of the country.47 Peru's NFAP slavishly adheres to the government's current 5-year plan even though it is shown in the NFAP's own analysis to be leading to forest destruction.48 Papua New Guinea's NFAP is so entangled with current government plans and draft laws, themselves framed by World Bank economists, that it is difficult to tell where one leaves off and the other begins.49

In many countries, NFAPs tend to consist of little more than shopping lists of unrelated, discrete projects favoured by one or another faction of the national elite, development banks, or business; such potpourris are recipes for deforestation. Colombia's NFAP, which consists of a mere 13 pages of summary tacked onto a poorly-integrated list of more than 100 diverse projects of very variable quality, is only an extreme example of this tendency. And, as the World Resources Institute (WRI) has observed: "In many instances the TFAP planning process has been led and managed by national Forest Departments, and primarily used to identify an investment program in the forestry sector."50

The mechanisms by which the contents of NFAPs are constrained by special interests are obviously quite varied, and could probably be traced in detail only through careful independent monitoring of the entire process through which NFAP documents are drafted. This is currently impossible due to the secrecy with which FAO and other agencies are treating the process. It is clear from other sources, however, that commercial or banking interests often play a significant role in setting the NFAP machinery in motion. In Thailand, the impetus came from the private firm Jaakko Poyry Oy, whose representative was able to convince a handful of top technocrats of the need for a Thai NFAP. Former Prime Minister Prem Tinsulanonda then secured

TheTropical Forestry Action Plan has long been criticized for accepting the 'top-down' approach that has plagued 'development' in the Third World. (Source: FAO)



a commitment to fund the plan from the Finnish government while on a trip to Helsinki in 1988. Two Finnish firms have bid for the project, but the contract is virtually certain to go to Jaakko Poyry Oy. Significantly, in late 1989 most officials in Thailand's Royal Forestry Department, including the new Director-General, were still unaware of these proceedings. In the Philippines, Pakistan, Laos, Bhutan, Bangladesh and China, meanwhile, the Asian Development Bank got the TFAP process under way.51 Based on these institutions' past records, it is only common sense to expect that plans deriving from such initiatives will frequently emphasize short-term economic returns at the expense of sustainability and livelihood.

TFAP planners, of course, contend that the dominance of governments, development agencies and private business consultants in the TFAP process is an unavoidable necessity. These are, they insist, the principal actors on the planning scene, and if anything gets done it must be through them.

Why TFAP is Flawed

This reply, however, unwittingly goes straight to the heart of what is wrong with TFAP. If the agencies behind TFAP do not feel free to join in an attack on the roots of the tropical forestry crisis without fear or favour, whether due to their attachment to the debt structure, the timber industry, national governments' five-year plans, or the imperatives of international agencies, then it follows that other backers must be found or the plan abandoned. For TFAP to demonstrate that it is reformable and constitutes a realistic and constructive approach to the problem, it would have to show a willingness to broaden its constituency beyond those organizations with a proven track record of forest destruction.

The crucial question of the interests of the agencies promoting TFAP thus extends far beyond the issues of which NGOs should be invited to Roundtables, or whether tribal groups should be briefed on the contents of TFAP documents before they are published. The question is one of dominance. Correcting TFAP's bias toward the imperatives of national governments, multilateral development banks and forestry industries would require more than simply allowing people's groups and independent organizations to offer criticisms and reviews of national forestry plans. Only if TFAP planning were overseen by those ordinary people most af-



Kayapó leader Paulinho Paiakan, in London to protest against British banks lending funds to a proposed dam scheme on the Xingu river in Brazil. Local peoples, not international aid agencies, must be allowed to decide how to use the resources in their areas. Environmentalists can help by supporting their struggles. (Photo: P. McCully)

fected by forest loss would the TFAP process have a reasonable chance of success.

As a minimal first step, this would require that TFAP's lead agencies, bilateral institutions and national governments lift the veil of secrecy which now keeps virtually all NFAP documents out of the public domain. Yet long-standing calls from WRI and other institutions for a TFAP"freedom of information act" have so far proved to no avail. Requests for information to FAO from Friends of the Earth UK have met with, among others, the claim that FAO cannot afford the costs of copying and mailing the relevant documents to England.⁵²

Valuing Tropical Forests

The nature of the groups whose interests TFAP represents also bears crucially on the frequently-raised question of the valuation of tropical forests. Increasingly, during discussions about forests and biodiversity, TFAP apologists fall back on the refrains: "To be saved the forests must be valued; the TFAP is a way of ensuring that they are so valued", or: "To be preserved, the forests must pay their way."⁵³ As slogans, these seem unobjectionable. But they have a fatal imprecision. The questions have to be asked: Whose values? To whom must the forests pay their way?⁵⁴

If valuing the forests means making them valuable to governments, as in Peru, Malaysia or Papua New Guinea, this will not ensure their survival. What makes forests valuable in most governments' eyes — their status as a source of ready income, debt repayments or bribes — is precisely what will ensure their destruction.

If valuing the forests means making them valuable to the logging industry, then this again will not ensure sustainability. TFAP planners generally contend that timber firms, given sufficiently long leases, will have an incentive to protect their concession areas from abuses, but the evidence is against them. Even in Thailand, whose forestry bureaucracy is better developed and more capable than many in the Third World, laws calling for sustainable cutting, replanting, rehabilitation and protection from encroachment were flouted in all of the country's hundreds of renewable 30-year concessions before logging was finally banned in 1989. In the Philippines, the Minister of Natural Resources has revealed that 90 per cent of logging companies have violated the terms of their leases.55 To suggest that TFAP is going to be able to change commercial loggers' practices around the world fast enough to avoid catastrophic destruction goes beyond naïvety to irresponsibility.

Valuing the forests by making them valuable in the eyes of the World Bank and other development agencies tends to result in similar types of destruction. As a commercial bank, the World Bank's main concern is ensuring commercial returns, debt repayments, and national income. Sustainability is likely to be of secondary interest, as is evidenced by the Bank's own NFAP Forestry Sector Reviews in Ghana and Papua New Guinea. If making the forests valuable means making them valuable to biotechnology or agribusiness companies for their genetic resources, destruction is again likely to be accelerated (*see* Vandana Shiva, 'Biodiversity, Biotechnology and Profit', *The Ecologist*, Vol. 20, No. 2, March/April 1990).

Ensuring the survival of the forests means paying more attention to the ways in which they are valued by local people with a long-standing dependence on them for day-to-day livelihood, together with those who realize that the value of the forests cannot be reduced to the economic exchange value of genes, timber and other goods and services. For these people, it is not necessary to 'give' the forests a value; they already have one. For them, it is not necessary to 'make' the forests pay their way, because they are already doing so, in the coin of the water, soil, food, medicine, shelter and rainfall that ensure a sustainable subsistence.

It is only when these points of view assume their proper place in the planning process that schemes for saving the forests will do more than promote the very forces which are destroying them. As the Brundtland Report has stressed, local peoples must have the "decisive voice in formulating policies about resource development in their areas" ⁵⁶

Is TFAP Reformable?

Freedom of information, therefore, while necessary to a reform of TFAP, is not sufficient. To have any chance of success, the planning process would have to be essentially turned over to ordinary people in thousands of communities around the world, a large proportion of whom are already fighting for the right to look after their local forests.

Sociologists of modern bureaucracies will realize how implausible it is to expect that FAO, UNDP, the World Bank and the consultants and national governments they work with could encourage such radical changes or even admit that they are possible. If three years of criticism of TFAP planners' secrecy and narrow, topdown approach have borne no fruit, it is hardly likely that another three years of lobbying them for recognition of local rights will achieve any notable success.

For environmental organizations concerned about the tropical forests crisis, the moral is clear. Instead of dissipating their energies on trying to reform unreformable NFAPs backed by central authorities, they should support already-existing locallybased movements for land and forest rights.

That entails rejecting the spurious and self-serving claim of UN organizations that TFAP is the 'only show in town' with respect to the tropical forest crisis. It means going outside the official system and learning to listen carefully to villagers in Indonesia and India as they describe their creative battles against land-appropriating development projects; to rubbertappers and the Xingu chiefs in Brazil as they talk about their tested ways of defending forest livelihoods; to NGOs in Thailand as they work through their steadilyevolving 10-point plan for backing the movement of hundreds of thousands of rural dwellers for more comprehensive rights over local land and forests.57 It means asking such groups what can be done by outsiders in support of their efforts. And it means opposing, when requested, the well-funded international projects that stunt and thwart their hopes and achievements.

It also means rejecting the idea, almost certain to be put forward by the Review Team currently assessing TFAP for the FAO, that TFAP, no matter how flawed, would do less harm to the forests than any alternatives. The present survey of nine national NFAPs already indicates that even for international organizations to do nothing would be a strategy superior to that of backing TFAP. More important is the point that TFAP is incompatible with the locally-based efforts toward a more democratic social order on which the only realistic hope for saving the forests rests. The struggle of Asian villagers for land and forest rights, for example, can only be set back by NFAPs which emphasize company-controlled commercial plantations. The efforts of tribal groups in the Amazon or Central Africa to safeguard their own natural and social heritage, similarly, are not going to get far unless NFAP-mandated logging schemes are halted in their tracks. It is not surprising, then, that many environmental groups in the South hold stopping TFAP to be an indispensable step toward the further development of positive alternatives which can preserve the forests. One can have TFAP or the forests, they say — but not both.

The Tropical Forestry Action Plan: What Progress? by Marcus Colchester and Larry Lohmann, a booklet published in March 1990 by the World Rainforest Movement and The Ecologist in associa-

tion with Friends of the Earth UK, gives country-by-country reviews of nine national forestry plans proposed under TFAP. It is available from Tropical Rainforest Campaign, Friends of the Earth, 26-28 Underwood Street, London N1 7JQ, UK. Price £4 including postage.

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Two particularly striking examples of the 54. confusion this imprecision has led to are the following. The first is from a TFAP discussion paper by J. J. Douglas, 'Economic Policy and Organizational Aspects of Forestry Development in Laos', Vientiane, October, 1989, p.10: " . . . a . . . compelling reason to log forests which have commercial value is that otherwise the forests are perceived to have no value by adjacent populations. In other words, the problems created by shifting cultivation and agricultural encroachment will intensify ... "Here Douglas is obviously muddled about where the benefits from logging would go, how unlogged forests tend to be valued by Southeast Asian farmers, and the causes of "agricultural encroachment". Another example is from the Peru NFAP: "How can the forestry sector contribute to resolving the social and economic problems confronting Peru? How can it contribute to the achievement of the social and policy objectives of the government? These questions constitute the fundamental basis for this sectoral review" (p.25). The author apparently does not understand that the "forestry sector" cannot hope to resolve social and economic problems if these problems are rooted outside forests, and that to have forests pay their way to the government is only one way of assuring that they have value.

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Sanctioning Resource Depletion: Economic Development and Neo-Classical Economics

by

Charles A.S. Hall

With centrally-planned economies in ruins, it is assumed that 'free market' economics provides the only viable path for economies to follow. However, the neo-classical economic model followed in the non-communist world is based on many untested assumptions and fails to take adequate account of natural resource use and environmental costs. Neo-classical economics 'works' only because it assumes the availability of massive quantities of non-renewable fossil fuels. Development, by making societies more and more dependent on polluting, finite resources, is a two-edged sword that destroys economic systems that once supported people without making them over-dependent on non-renewable resources.

It is widely believed that the problem of feeding the world's growing population has been solved. Contemporary economics, and its handmaiden technology, are thought to have been applied successfully to development (especially that of agriculture) in both the Western and the developing world. Although large pockets of extreme poverty, malnutrition and starvation still exist, the average person, it is argued, is better fed than two or three decades ago, despite a doubling of the human population. This trend is generally attributed to some basic economic-political concept or ideology, variously called 'free enterprise', 'centralized planning' or whatever, depending on one's political or economic leanings. Where there are failures, and there are many, the opposing ideology tends to get the blame.

Unfortunately this view is incomplete, misleading and a recipe for the ultimate failure of development. The words 'development' and 'economically successful' do not describe accurately the processes that have taken place. In virtually all cases, these terms should be replaced by 'exploitation of resources' and 'industrialization'. Although wealth may appear to be produced through economic growth, wealth production occurs generally only through the increasing exploitation of natural resources, normally in an increasingly non-renewable manner, and almost entirely through the increasing use of fos-

sil fuels. Cheap oil and its derivatives continue to be used to alleviate the principal impacts of depletion and environmental degradation and mismanagement, giving too often the appearance of solutions whereas in reality solutions are only being deferred. In short, existing economies - whether centrally planned or free market -- 'work' only because we extract oil, coal and other resources out of the ground to make them work.1 Meanwhile, populations grow relentlessly, oil reserves are drained, and our air and water are increasingly fouled, destroying those remaining non-petroleum-intensive economic systems.

These problems are not taken into account in most economic analyses, because contemporary neo-classical economics fails to assess the total social costs and benefits of most projects. Nevertheless, neo-classical economic assumptions are used routinely in economic decision-making as if there were no alternatives, and their use sanctions many projects unworthy by most other criteria.

Economics as Ideology

A natural scientist tends to view knowledge, especially models of that knowledge, as tentative, even ephemeral, as ideas that are examined, tested and subjected to rigorous assessment. Natural scientists tend to be suspicious of established knowledge because they have watched some of their most trusted principles crumble.

Economists, however, cannot easily apply the empirical criteria used in science. As the economist Milton Friedman has stated: "... a theory cannot be tested by comparing its 'assumptions' directly with 'reality'".2 In general, very few economic papers test hypotheses. This led Leontief to ask: "How long will researchers working in adjoining fields . . . abstain from expressing serious concern about the splendid isolation in which academic economics now finds itself?"3 This attitude often confuses natural scientists who expect theoretical models to be tested before being applied or developed further. But major decisions that affect millions of people are often based on economic models that, although elegant and widely accepted, are not validated. Many practitioners of the scientific method find this arrogance of ideology over empiricism, especially where it affects so many lives, to be unconscionable.4

My criticisms are both fair and unfair: fair because they do apply to most contemporary neo-classical economics *as taught and practised*, unfair because some economists (for example, Samuelson, Mishan, Hotteling and Daly) have made extremely thoughtful contributions to a consideration of these problems, and because many social scientists use extremely rigorous procedures in difficult terrain. But the influence of such thought to routine economic analysis seems very small and is still inadequate.

An additional problem for many natural scientists is that economics pays almost no attention to the physical characteristics of

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economic systems.5 Economists have no laws of thermodynamics to constrain economic activity. In the anthropocentric view of Barnett and Morse, authors of the 1963 Scarcity and Growth: the Economics of Natural Resources Availability, which presents the archetypal neo-classic economist's position on resources, it is incorrect even to consider the physical characteristics of resources if one is interested in future resource availability.6 In their view, resources are supplied not by nature but by human ingenuity, and the only interesting index of scarcity is the price per unit resource. Barnett and Morse tested for the effects of scarcity by examining inflationcorrected prices for resources over the period 1870-1957. They found that, except for forest products, there was no clear pattern of price increases, and hence, in their view, no increasing scarcity of resources. Most neo-classical economists have accepted this assessment and therefore totally neglect resources in their analysis. In 1974, Solow suggested that "the world can in effect, get along without natural resources", but more recent assessments, some by economists, show that natural resources have become scarcer even by Barnett and Morse's criteria.7.8

Some Critiques of Economics as a Discipline

It has been said that, "the purpose of studying economics is not to acquire a set of ready made answers to economic questions, but to learn how to avoid being deceived by economists".9 The intellectual basis of economics as a discipline (more specifically the neo-classical model that dominates the economic analysis in the non-communist world) is fundamentally flawed, and it is therefore unsuitable to use it to guide development in either the developing or developed world. As Marxism, the only important viable intellectual alternative to the neo-classical model, has faded in appeal, the neo-classical model is often accepted as an appropriate model to follow by default. Recent events in Eastern Europe have been interpreted as showing that the neo-classical, western approach to economics 'works', but this is only because it helps nations to run through their resource stocks faster.

A Flawed Paradigm

There are at least five fundamental flaws underlying the use of contemporary eco-



The Woodburn flood in New South Wales, Australia. Serious floods may be a financial disaster for those directly affected but boost GNP as houses and businesses are repaired and restocked.

nomics as the principal tool for making economic decisions.¹⁰

Economics normally uses the gross national product as a proxy for human well being:

Projects tend to be evaluated only on their projected contribution to a country's gross national product (GNP). But, as has been well documented, GNP is only a partial measure of those conditions that contribute to human happiness and well being, the supposed goal of economic activity. GNP says nothing about the distribution of wealth and it is an inaccurate measure of production, especially in areas where development is being introduced.11 GNP does not measure non-market transactions, and therefore undervalues both environmental services and non-market sources of materials such as food. There is no provision made within the use of GNP for including the economic benefits of properly functioning ecosystems, or their degradation, because such processes do not normally interact with markets.12

GNP does not measure the actual wealth citizens enjoy, but rather the flow of new wealth into the economy. Thus, GNP rises if people buy replacement goods more frequently because the original goods are poorly made, even though that process produces more pollution today and decreases the resource base available for the future. Development policies whose principal goal is to increase GNP, as opposed to meeting basic human needs, can encourage developing countries and their entrepreneurs to liquidate stocks, such as forests, as rapidly as possible to increase the flow of money through the economy.¹³ When rivers flood and rains fail as a result of the removal of the forest, there is no system to account for the losses to GNP. In fact, GNP actually increases as villages destroyed by floods are rebuilt.

Economic models have not been validated:

The most fundamental assumptions of neo-classical economics are virtually untested. In most economic textbooks, there is a complete lack of any hypothesis-forming and data-testing (other than the occasional, but useful, time series analysis of one parameter).14 Where there have been empirical analyses (of, for example, consumer choice), they have shown frequently that the behaviour of real people in experimental or laboratory situations was quite different from the assumptions of a given neo-classical model.15 Empirical tests to validate economic models have been undertaken even less in the developing world.

Most non-economists do not appreciate the degree to which contemporary economics depends upon arbitrary assumptions. Nominally objective operations, such as determining the least cost for a project, evaluating costs and benefits, or calculating the total cost of a project, normally use explicit and supposedly objective economic criteria. In theory, all econo-

Neo-Classical Assumptions

The following are some standard assumptions underlying neo-classical economics, which are made so that economic models are 'workable' (that is, conceptually and analytically tractable). To my knowledge, few or none of them have been tested empirically or comprehensively.

A. There exists perfect markets, which implies:

- Buyers and sellers (agents) have perfect information about the present and the future;
- there is perfect homogeneity and divisibility of goods produced;
- there is totally free entry into the markets by any agent;
- there are an infinite number of agents in both the supply and demand side.
- B. Economic agents maximize util-

mists might come up with the same conclusions to a given problem. In fact, such 'objective' analyses, based on arbitrary and convenient assumptions, produce logically and mathematically coherent, but not necessarily correct, models. As one example, both classical and neo-classical theories were originally developed using concepts of markets as they existed in agrarian societies. These theories have been transferred more or less unchanged to applications in the modern industrial world. No changes have been made to the basic theory to take account of industrialization, the consequences of the development of the power of money itself, the development of large corporations and institutions or the development of advertising, each of which characterizes contemporary society and the 'markets' where we buy and sell.

Economic analysis leads to the destruction of nature and of the basis for real wealth:

Neo-classical economics argues implicitly for the destruction of the natural (as opposed to the developed) world, and as such assists in the destruction of many existing non-market economies, since the services of ecosystems (such as controlling hydrological cycles or moderating climates) are rarely reflected in market prices. Thus neoclassical economics destroys real economic wealth while encouraging the generation of other, often less important, forms of wealth that happen to enter markets. ity. Agents are 'rational', which means that they make decisions only by the criteria of maximizing their monetary utility and profits.

- C. If occasionally there exist some external effects in production and/ or consumption, they always can be identified and internalized.
- D. The markets deal with factors of production which are:
- Fully employed;
- perfectly mobile from one sector to another;
- react perfectly to marginal changes in the economy.
- E. Markets mechanistically and automatically adjust to changes in economic conditions and thus reversibility is always possible.

In the developing nations, investment policies based on neo-classical economic analyses encourage borrowing from developed countries and hence growing indebtedness. Pressure to service the debt encourages the mining of natural resources to get a quick return on the investment so that the lending banks get their cash return, a process which is not taken account of in the original analyses. In the rare cases where natural resources are utilized, their value is heavily discounted. In one particularly good analysis, Repetto showed that many tropical countries sell their trees at a price far below their worth to either the buyer or, especially, the seller.16 Canada does much the same, as does the U.S. in the Tongass and Flathead National Forests.17

In the US, the discount rate (a mathematical procedure to weigh the time value of money) used in most development project calculations is set by the U.S. Federal Government. It reflects the cost of borrowing money from commercial banks and changes with Federal monetary policy and other factors that are independent of, and perhaps quite irrelevant to, basic resource decisions.

The use of a discount rate means that a gain of a thousand dollars today could weigh more heavily than tens of thousands of dollars gained slowly over a long period of time. Since many of the direct benefits of natural ecosystems are gained at low rates (as measured in dollars) but over very long, even indefinite time scales, their value tends to be heavily discounted. For example, natural areas which yield limited financial gains in conventional terms, but do not require fossil fuel-derived inputs (in contrast to virtually all modern developments), are developed based on an expected stream of economic revenues from that development. Hence the calculated cost-benefit ratio for filling in a marsh that might serve as a regional flood or hurricane buffer, a nursery for fish or wildlife, or a recreational area might be far less than the difference between the short-term gains and the costs after development. But should the cost of the fuel or other inputs required to make the development work rise dramatically in the future, as it will, it might be found that the monetary value of the costs exceeds the gain.

Thus the use of discount rates leads to the destruction of natural systems. When the petroleum subsidies are gone or become too expensive, however, the benefits of development will be gone, and the natural systems may no longer provide their original solar-powered services. This has already happened in southern Louisiana where the economic boom brought by petroleum production has been replaced by economic depression in an area that now has neither petroleum nor the original natural environment that once supported local livelihoods.

The concept of making decisions while discounting the future was taken to its logical extreme by Clark, who advocated that under many circumstances the best way of managing fish stocks was to harvest them to exhaustion.¹⁸ The money so gained should be invested elsewhere (perhaps in some other fishery). Eventually this approach would produce lots of money but nothing real left to invest it in.

In the light of the above discussion there is good reason to consider a negative discount rate for certain resources, rather than the normal positive discount rate.¹⁹ Due to depletion, a barrel of oil is likely to be more, not less valuable in the future. The same is true for a ton of soil or a hectare of forest. The use of a positive discount rate makes any of these resources essentially worthless in a decade or two.

Society cannot afford to discount the future. If forests are destroyed, the rainfall, and hence agricultural production, of a region may be diminished. This may be only a small amount for any given year, but the effect over many years would be large. If discounting is used in economic analysis, the value of the agricultural loss would appear negligible. Much of the Levant was forested and farmed in biblical times, but "Neo-classical economics destroys the necessary discussion of economic means and ends, and replaces it with socially sterile and simplistic objectives based essentially on short sighted and often manipulated human greed."

is now desert, probably due largely to human activities. The money gained from that original deforestation was almost certainly trivial, even if invested, compared to the loss of a thousand or more years' agricultural production.

The market is the wrong yardstick for large scale analysis or decision making:

Neo-classical economics leaves the economic decision making of entire nations to the day-to-day commercial tastes of individual consumers. It is assumed that consumers will budget monetary resources in a way that is 'best' for them. Consumers are assumed to be 'rational' - meaning selfish and entirely materialistic. Since neo-classical economics is based on the assumption that people's wants and needs are best expressed by their behaviour (purchases) in the market place, then no further discussion of the future investments made for a nation is needed. Those decisions will be determined only by entrepreneurs providing for anticipated routine consumer purchases. Those items that are not explicitly available in the market place, such as public health, clean air, or justice before the law, will not be provided.20 Thus neo-classical economics destroys the necessary discussion of economic means and ends, and replaces it with socially sterile and simplistic objectives based essentially on short sighted and often manipulated human greed.21

• Price does not always reflect scarcity:

Price, the economist's usual measure of scarcity, reflects very poorly many important aspects of scarcity. Many scientists, especially environmental scientists but some economists as well, have argued vehemently against the perspective of Barnett and Morse that inflation-corrected price changes are the only relevant measure of scarcity. Daly, for example, has shown that if all resources become more scarce then the prices of all goods, including resources, will inflate as a general trend and inflation-corrected values for all materials will not increase.22 The original analysis of Barnett and Morse (which found no indication of increasing scarcity

of raw materials as reflected by their price) was incomplete because the decreasing price of energy, and its increasing use, masked the consequences of resource depletion.²³

For many resources large increases in energy use have been required to supply society with cheap raw materials as these materials were depleted and/or mismanaged.24 Since energy was not scarce in the United States during the period analysed by Barnett and Morse, and since cheap energy has allowed ever lower grade domestic reserves as well as foreign resources to be increasingly exploited, there is no reason for prices to increase even though the highest grades of virtually all major US resources have become exhausted. Should energy become scarce in the future, as it did for a period in the 1970s, then probably all resources would become scarce by Barnett and Morse's criteria, as indeed occurred in the immediate aftermath of the oil crisis.25 When international prices of energy declined again, so did the prices of raw materials.

It is possible that new technologies will be developed that will compensate for the lower availability of conventional fuels in the future. *That is an article offaith and the essence of the neo-classical economist's lack of concern about resources*. The evidence for technology overcoming any scarcity in the past without increased fuel use is ambiguous at best.²⁶ Thus, in a sense, the fundamental argument is philosophical, at least until such time as the world faces a major petroleum shortage again.

A factor in the discussion of scarcity which is usually ignored is how the cost of a resource may increase to the supplier but not to the consumer. This has happened with copper, the price of which has remained constant even though its ore grade quality in the US has, in general, declined more rapidly than increases in the efficiency of its extraction. The US and other large consumers of copper have therefore turned increasingly to sources in Zaire and Chile. As the environmental safeguards in the new supply nations are not as strict as they are for the United States, more pollution is produced per kilogram of copper extracted. The net effect may therefore be no change in the price of copper in the United States, but an enormous increase in the total cost of providing that copper. But that cost increase is paid not by the consumer in the United States but rather by the nationals and ecosystems of the country where the copper is mined. Thus the net effect of increasing scarcity of copper in the United States is increasing social and environmental costs of mining copper elsewhere, although that is not reflected in the price of copper to the US consumer.

Despite these and other major problems with the essentials of contemporary economics, the basic concepts of the neoclassical approach have been recently adopted in principle by the International Monetary Fund (IMF) and the United States Agency for International Development (USAID) and are routinely used by other development agencies and government institutions around the world.

The Need to Refute Bogus Economics

It is not only ecologists who have serious reservations about economics as a discipline. The economist F.E. Banks has stated that:

"The difference between science and economics is that science aims at an understanding of the behaviour of nature, while economics is involved with an understanding of the behaviour of models - and many of these models have no relation to any state of nature that has ever existed on this planet, or any that is likely between now and doomsday. The word that comes to my mind when confronted by these fantasies is fraud; but even when not fraudulent they are usually self deceptive, irrelevant, picayune, and always expensive. The latter is true because the wages of economic researchers, unlike the wages of sin, tend to be paid by the community rather than the perpetrator, and the community still labours under the delusion that the sophistry it sees in the 'learned journals' of economics represents a valuable contribution to the general welfare."27

Banks concludes by suggesting that the most important thing that researchers in economics can do is not to continue in the same old way but to refute that previous work which is bogus.

Leontief, another economist, has noted that many economic models are unable "to advance, in any perceptible way, a systematic understanding of the structure and the operations of a real economic system".28 Instead, they are based on "sets of more or less plausible but entirely arbitrary assumptions" leading to "precisely stated but irrelevant theoretical conclusions".29 Bailey, Lekachman, Myrnick, Goodland and Ledec, Makgetla and Seidman and many others both from within and outside the discipline of economics have chronicled the failure, mutual conflicts and frustrations of many economic models, and even of the entire approach of neo-classical economics.30

Although some economists have attempted to discuss some of the inadequacies listed above, these problems generally are omitted from theoretical and applied analysis, either because they are difficult to quantify or because they may be mathematically intractable.³¹ Even when the corrections are included in the basic analytical framework, they may still fail to genuinely resolve the issue because the framework itself is based on faulty logic.

The Example of Agricultural Development

Most increases in agricultural yields which have occurred around the world in the post-War years are attributable to the industrialization of farming.32 When the fossil fuel-derived inputs of fertilizers, pesticides and modern machinery, which make the dramatic increases in yields possible, are removed, vields tend to fall to levels below their original value because the quality of the agricultural land has declined. Although the intrinsic quality of most of our major agricultural soils has declined substantially, this is not reflected in yields because of increasing inputs.33 For example, the United States and Canada are losing considerable quantities of topsoil but crop yields are increasing because more fertilizers, and crop varieties bred to use the fertilizers, are used. Thus conventional economics may show an increase in the value of agricultural production while the resource base for agriculture is undergoing serious degradation that is not reflected in the market.

In countries where historical data are available, there is no evidence of increased agricultural production without a concomitant increase in the use of industrial energy. This is as true for China,³⁴ as it is for the United States,³⁵ or for the extremely intensive cultivation that occurs in Japan or Israel. It is not clear whether new genetic engineering technologies or new types of 'organic' farming will change this pattern if they are implemented on a large scale.

A crop plant must capture solar energy and invest this energy in sequestering nutrients, assimilating carbon, defending itself against insects and capturing water. In a wild plant, these processes require substantial amounts of energy. With modern agricultural technology, the net yield of plants is increased but not the gross production. The non-seed producing functions of plants are increasingly subsidized with external energies, as industrial energy, rather than the cultivar's own energy, is used for water supply, nutrient supply, and pest defence. As a rule, the cultivars use less energy investments for root growth, for generating secondary chemi-

Comparison of an old variety of wheat (left and right) with a new short-stemmed high-yield variety (HYV). The HYVs were promoted under the Green Revolution as the answer to the world's food problems, but their high yields are only possible with fossil fuel-derived inputs of machinery, pesticides and fertilizers. When oil supplies are no longer readily available crop yields will fall dramatically.



cals and so forth, and so the proportion left for production of seeds increases.

New Economic Goals

The world's human population, and thus its requirement for food, is doubling every 30 years. The conventional 'solution' to the problem of how to feed this increasing population *is not technology per se but rather the industrialization of agriculture*. Can this be sustained? Whether or not the world 'runs out' of oil in 30 or more years is probably far less important than the fact that within a decade or two most of the oil left to be exploited will be in about four countries, who will be able to dictate the price.

If, and eventually when, energy resources are withdrawn, we will be faced with even lower yields on remaining farmlands and the destruction of economies that cannot function without fuel. Our present-day economic paradigm will have failed catastrophically.

Of course, any form of development, no matter how well thought out, will eventually run up against the roadblock of increased population growth if present patterns continue. If people and their material requirements exceed the resources that a region can provide from the basic renewable biotic systems without supplementary fossil fuels or other external subsidies, the region simply cannot support these people. When this occurs, no economic analysis can produce solutions that will work, and both natural environments and human conditions will deteriorate. This is already occurring throughout the Third World.

It seems impossible not to conclude that, over the longer term, the most important economic goal of most of the world's nations should be to decrease the human population growth rate, so that each nation can retain the option of maintaining their own agricultural production without an increasing reliance on uncertain industrial resources. Likewise, it should be agreed that the most important economic goal for developed nations is to decrease their reliance on depletable and polluting non-renewable resources. Unfortunately these considerations, like others discussed earlier, do not enter into market decisions for routine economic purchases. If fuel and its derivatives become too expensive then no market economic system can readjust the resource base to the increased human population. This is the most important economic question facing humanity; and it is exacerbated rather than resolved by contemporary neo-classical economics.

I thank Cutler Cleveland, Michael Colby, Robert Kaufmann, Chuck Mohler and Ron Trosper for very helpful reviews. Many of these ideas were developed during discussions with Andrea Baranzini, whose study with me was financed by the Swiss National Science Foundation grant 1.378-0.86. Mohan Wali gave me the original encouragement to tackle this problem in the international arena. And finally, Howard Odum has encouraged many of us to expand ecology beyond natural ecosystems. We are all, ultimately, most indebted to him.

This article is an edited and revised version, with permission from the author, of 'Economic Development or Developing Economics: What are our Priorities?', in Wali, M.K. and J.S. Singh (eds), *Environmental Rehabilitation*, S.P. Bakker Publishers, The Hague, Netherlands, 1990.

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Communal Rights vs Private Profit:

Tribal Peoples and Tea Plantations in Northeast India

by

Gram Vikas and Pradan

A project to establish tea plantations on tribal lands in Orissa, India, will result in social, material and ecological impoverishment. The state authorities totally disregarded the tribals' customary, constitutional and legal rights and did not even tell them that they were to be dispossessed of the land on which they depend for their subsistence. The authorities claim the plantation project will bring economic benefits, yet all it offers the tribals is an existence they see as meaningless and demeaning.

The Government of Orissa intends to grant up to 20,000 hectares in Thuamal-Rampur Block, Kalahandi District, to the Industrial Development Corporation of Orissa (IDC) for the establishment of tea plantations. The project is based on the doubtful assumptions that the production and sale of tea will create employment for the local people and so improve their material status.

The dominant population groups in the area are the Konds, a Scheduled Tribe, followed by the Doms, a Scheduled Caste. Gauras, traditionally cattle rearers, also live in the area. The open valleys and stream beds of the mountainous area in which Thuamal-Rampur is situated provide a small amount of land for permanent cultivation, but the bulk of the population depends on shifting cultivation, a traditional tribal practice, for its subsistence.

The people of Thuamal-Rampur are almost completely dependent on their immediate environment. They supplement cultivated cereals with mango, jackfruit, tamarind, roots, tubers, leafy vegetables, firewood and timber from the hills. The area is isolated and the market has not yet made significant inroads on the tribal economy. Paid work and the division of labour are almost absent. Tribal life is punctuated with numerous festivals and ceremonies, most of which are related to shifting cultivation and the growing of cereals.

Tea and Social Alienation

The IDC of Orissa have been given possession of half of the 2400 hectares of Thuamal-Rampur which the state Government has already earmarked for tea plantations. The Konds were given no advance warning of this, and were amazed to see surveyors' posts being raised on their traditional lands. When questioned, the surveyors told the Konds: "We are doing our job Why ask us? The Government has allotted this land to the IDC and we are employees doing our duty. Go and ask the Government" and: "This is Government land. The Government will give it to anyone it feels like." The more paternalistic officials told them: "You people are primitive and uncivilized. You do shifting cultivation, wear loin cloths and eat mandia. We will raise tea plantations in the area, you will get employment and in the process get civilized." Attempts to carry on with traditional practices on the earmarked land can lead to police and legal action.

The Konds rarely travel beyond their own immediate neighbourhood. But those who have made the journey to Bhawanipatna, the District Headquarters, have been told that the decision to set up the tea plantations was the state Government's, and the District Administration has no capacity to modify it. The Konds, whose society is localized, non-structured, informal and oral, find it impossible to negotiate with the administration, which is formal, complex, hierarchical and legalistic. The tribals do not even have access to the officials who take the decisions on the fate of their lands. Once land is allotted for tea plantations, whether by the IDC or a private company, the logic of an economic enterprise production, productivity and profit takes over. The IDC has employed soil scientists to test the suitability of the soil for tea plantations, but it has not employed anthropologists to test if tea plantations will take root in the minds and hearts of the people.

Wage Labour

The IDC needs wage labourers to fell and clear vegetation on the hill slopes to make way for the plantations. The tribals, however, are not interested in manual wage labour which means working fixed hours and is far more strenuous than the tribals' traditional activities. For the tribals, labour is not an alienating and monotonous activity, but an integral part of their culture. They find wage labour devoid of all meaning. The Konds have not worked on any of the previous Government employment schemes in the area and no tribal has worked for the IDC in erecting surveyors posts or in clearing small patches of land. The IDC have had to employ non-tribal labourers, Gauras and Doms, from other parts of Thuamal-Rampur.

The influx of tea plantation labourers will bring a secondary influx of shopkeepers, traders, and other service establishments. This migrant population will compete with the tribals for the limited local resources. The price of land will rocket. Tribals are already losing their meagre land holdings to outsiders, despite the law

Gram Vikas is a voluntary organization working in Orissa. **Pradan** is a group based in Delhi which provides training and management support to voluntary organizations.

prohibiting the transaction of land from a tribal to a non-tribal. Integration into the formal economy will enmesh the Konds and their natural resources in the market. The tea plantation economy is antithetical to the tribals interests. A consumer is not interested in the history of the tea he is drinking, but only in buying the best for the least, while the tea company is interested in making the maximum profit.

Cultural Collapse

The first stage in establishing the plantations will be to fell all the fruit bearing trees (whose felling is culturally prohibited by the tribals), and to clear vegetation from land used for shifting cultivation. The tribals of Dhamanguda have said that they would rather be killed than let anyone fell their fruit trees. According to one Kond: "They will deforest our sacred forest dedicated to Pratap Deota. They will cut the trees on which our gods live. How will we show our face to each other? How will we pray to our gods?"

Dispossessed of their resources and despised by the immigrant population, who see the tribals as socially inferior, the tribal communities face cultural collapse. The sudden shift in their social, economic and cultural relations will leave the tribals bewildered and depressed. As has been experienced elsewhere, this bewilderment can soon turn into resentment and antagonism.

The signs of antagonism are already apparent. In some villages, the tribals have demolished the survey posts put up by the IDC. Unwilling to become manual labourers, the more resourceful and determined of the tribals will probably move into the hinterland to continue their traditional way of life. Others will have to settle for work as coolies, servants in hotels and houses and fuelwood loggers.

The tribals will not be assimilated into the formal economy. On the contrary, they will be alienated and degraded. Their autonomy will be eroded and they will be put at the bottom of the social hierarchy.

Environmental Destruction

The Orissa Government is trying to justify the tea plantations on environmental grounds by claiming that they will rehabilitate 'wasteland'. But the people of Thuamal-Rampur are completely dependent on this 'wasteland' for their survival. Describing it as 'wasteland' is therefore

absurd. Also, it is likely that the tea plantation project will further erode the land, rather than rehabilitate it.

Tea does not grow in the shade of traditional tree species. Land currently put to shifting cultivation, together with other land under mixed vegetation, will have to be cleared to make space for the tea plants. As a result, eleven villages which depend on the land made over to tea will be forced to obtain their subsistence from the adjoining hill tracts. But these adjoining hills are already used by other villages, and the pressure on them will be further accentuated by the migrant population's demand for fuelwood and timber.

The tea plantation will thus create a focal point for widespread deforestation. This will lead to increased soil erosion and a reduction in the hillsides' ability to retain water during the monsoon, which in turn reduces the soil's capacity to sustain vegetation. After the rainy season, the streams will soon dry up, making it impossible to take two crops on the stream beds, and leading to a shortage of drinking water for people and cattle.

Several environmental scientists have warned that deforestation of the area may have wider hydrological implications as it is in the catchment of the Mahanadi and Indravati rivers. Tea plantations are also



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likely to lead to a reduction in local rainfall. The very features that make the area favourable for tea will therefore be undermined once the natural vegetation is removed. In the Chotanagpur region, where frequent afternoon showers known as 'instability rains' favour the planting of tea, the rains decreased to such an extent once the forest were cleared that the tea plantations had to be abandoned.

Legal Dimensions

The Kalahandi land survey of 1955, on which the local land rights are based, did not include the hillsides and therefore ignored most of the tribals' land. The reason given for not granting occupancy rights over this land was to discourage shifting cultivation. Yet shifting cultivation is ecologically the most suitable form of land-use on the hills. Shifting cultivation is far more strenuous than permanent cultivation on the same land, and if the villagers opted to follow a harder path it is because permanent cultivation is not sustainable on the hill slopes.

The idea that shifting cultivation is environmentally damaging developed during British rule because the practice destroyed what the colonial rulers saw as valuable timber resources. It is ironic that if the tribals of Thuamal-Rampur had taken the environmentally damaging path of permanent cultivation on the hill slopes, they would have got occupancy rights and thereby a licence to continue degrading their land. Instead, they have been penalized for ecologically prudent behaviour.

The Kond's legal position with respect to their land has not actually affected them through the years and they have been allowed to continue their traditional practices. But now that the proposed tea plantations threaten to take their land away, the question of ownership and rights assumes great significance. The Orissa Government Lands Settlement Act (1962), provides the overall framework for the allotment of Government land in Orissa. Since the hills have not been surveyed, the Government may be deemed the owner of this land by virtue of being the owner of all 'unoccupied' land. However the State can only enjoy property rights over the land subject to the customary rights of the people. Further, the Act by implication does not legislate for Government land falling in revenue villages (a revenue village consist of village site, permanent agricultural land and some land for common use in the valleys). It also stipulates

"If the tribals had taken the environmentally damaging path of permanent cultivation on the hill slopes, they would have got occupancy rights. Instead, they have been penalized for ecologically prudent behaviour."

that the poor and weaker sections are to be allotted land first and, above all, although it enables the Government to allot land to industries and other interests, it does not give the Government arbitrary powers.

Deprivation of Livelihood

As the tribals depend on these hills for their subsistence, it appears that the proposed land allotment infringes Article 21 of the Indian Constitution, which reads:

"Protection of Life and Personal Liberty — No person shall be deprived of his life or personal liberty except according to procedure established by law."

The Supreme Court in Olga Tellis vs Bombay Municipal Corporation, popularly known as the Bombay Pavement Dwellers case ruled:

"The right to life includes the right to livelihood. The sweep of Art. 21 is wide and far reaching . . . no person can live without the means of living, that is, the means of livelihood.

"The State may not, by affirmative action, be compelled to provide adequate means of livelihood or work to the citizen. But, any person who is deprived of his right to livelihood, except according to just and fair procedure established by law, can challenge the deprivation as offending the right to life conferred by Art. 21.

"Any action taken by a public authority which is invested with statutory powers has, therefore, to be tested by application of two standards: The action must be within the scope of the authority conferred by law and secondly, it must be reasonable."

The Supreme Court further provided that there is no hard-and-fast measure of reasonableness which can be applied to all situations alike. Each case had to be judged on its own merits. This point has subsequently been accepted by the Supreme Court and the High Courts. In the Thuamal-Rampur case, since the tribals are completely dependent on the hills for their subsistence needs, the allotment of land for tea plantations certainly constitutes deprivation of their livelihoods.

Government Hypocrisy

The Forest (Conservation) Act (1980) prohibits the conversion of any land marked as 'forest land' in Government documents to a non-forest purpose without permission from the national authorities. Tea plantations are included in the nonforest category and the land being allotted was designated as forest land under the Forest Rules of Kalahandi State. Since the Government has not changed the status of the land the designation still holds and the state Government should have sought clearance from the central authorities.

Apart from the problems of hydrology and soil erosion mentioned above, the project will also affect the forests' abundant wildlife. While the Government is acquiring an additional 845 square kilometres of forest for the Simlipal National Park, it simultaneously intends to destroy much of the wildlife habitat of Thuamal-Rampur.

Although the law forbids non-tribals from taking over tribal lands, the Government of Orissa is preparing to dispossess the Konds, and pass their common property on to the tea company for the creation of private profits. The law also protects the tribals' trees from non-tribals and requires the villagers to seek permission to fell trees standing on their own land, even for their own use. Yet, the Government has allotted land with trees standing on it to the IDC with the tacit understanding that these trees will be removed to make space for tea plantations. The Government legislates against the tribals becoming indebted and at the same time takes away the tribals' resources, and so makes indebtedness inevitable.

In conclusion, the tea project will result in material and social deprivation for the local people because it fails to take into account the existing social context of Thuamal-Rampur. It will result in environmental degradation because it fails to understand the relationship between the environment, the people and the tea plantations. And it will violate existing laws because it considers these peripheral. To call such a process 'development' is a gross misuse of the word.

This article is an edited version of 'Land Allotment for Tea Plantations in Kalahandi', *Lokayan Bulletin* Vol. 7, No. 2, March-April 1989.

Social Symbiosis:

A Gaian Critique of Contemporary Social Theory

by

Alwyn K. Jones

The assumption in the Gaia hypothesis that humanity is an integral part of Gaia poses particular problems for mainstream sociological theory which has developed along the mechanistic and reductionist lines of conventional science. However, the writings of a few social theorists are compatible with a holistic Gaian worldview.

The Gaia hypothesis asserts that the Earth is a single 'living' organism in which all its parts interrelate symbiotically together to create the whole. The relationship between the separate parts of Gaia is therefore a cooperative one in which no activity can be seen in isolation from any other. This hypothesis is diametrically opposed to mainstream social theory which supports the underlying anti-Gaian ethos of industrialism.¹

Though pioneering social theorists such as Saint-Simon (1760-1825), Comte (1798-1857) and Durkheim (1858-1917) were by no means unaware of the extent to which industrialization had eroded the mutualistic and symbiotic values of traditional culture, they nevertheless seem to have accepted the inevitability of this process. They were confident that substantial benefits would accrue to humanity from industrialization as long as action was taken to ensure that the appropriate social arrangements were in place. Such action would be based on rationally acquired scientific knowledge derived especially from the new science of society - sociology - the methodology of which was based on the established natural sciences. Spencer (1820-1903), another important early theorist, gained considerable social acclaim in 19th century Britain for his particularly vigorous support for these ideas.² In an élitist and ethnocentric manner, he closely identified social theory with biology and coined the term 'the survival of the fittest' to account for the evolution of human societies towards their ultimate industrialized stage of development.

All these writers can be considered 'ideologues of progress', who left little room in their theories for the kinds of issues with which Gaia is concerned.³ Much the same can be said for Marx's critique of capitalist society which, especially as interpreted by his followers, did not extend to industrialism in general. What is lacking in social theory, therefore, as Illich argues, is a comprehensive theory of industrialization:

"Our present ideologies are useful to clarify the contradictions which appear in a society which relies on the capitalist control of industrial production; they do not, however, provide the necessary framework for analyzing the crisis in the industrial mode of production itself."⁴

Industrialism presupposes a universal, and virtually unequivocal, acceptance of industrial growth and expansion.⁵ Indeed it can be argued that the pursuit of unlimited material growth is the *raison d'être* of industrialism. In such circumstances, nature will inevitably be regarded as *external* to humans and defined as a resource to be exploited for human gain. This attitude is a central feature of the industrial culture as a whole, and reflects the dominance of material over aesthetic, spiritual and other human values.

The Eclipse Of Gemeinschaft

The distinction made by Tonnies between *Gemeinschaft* (community) and *Gesellschaft* (association) is vital for a Gaian critique of industrialism.⁶ For Tonnies, the pre-industrial social order is characterized by *Gemeinschaft* in which people interact together on the basis of reciprocal and 'whole person' relationships which are to their *mutual* advantage. In such circumstances an organic or natural will (*Wesenwille*) embraces the whole of the individual's being; it places being before thought, and emphasizes the unity felt by individuals in *Gemeinschaft* relationships. In Kumar's words:

"Members of *Gemeinschaft* bodies follow collective sentiment, rather than calculating egotistical reason. They are governed by custom, folkways and religion. The social relations that these give rise to are best expressed in the family, the village, and the town, or the corporate organization of guilds, colleges, churches and religious communities. Intimacy of scale is critical: large increments of numbers or of physical distances would destroy the texture of frequent daily contacts, in different places and for different purposes, that are the hallmark of *Gemeinschaft* life."⁷

But with the onset of industrialism, the mutualism to be found in *Gemeinschaft* gives way to the competitiveness of *Gesellschaft* society in which relationships are fragmented, selfmotivated and egocentric. Rational will (*Kurwille*) comes into prominence over natural will and puts calculative thought before being, is future-oriented and emphasizes means over ends. No longer do people treat each other as ends or whole persons, but as means by which to achieve particular objectives or purposes.⁸

Moreover, the 'intimacy of scale' to which Kumar refers is ruptured as large specialized institutions replace family and community in the meeting of the more essential human needs. Institutions thus become the settings for the establishment of associative relationships such as buyer/seller, doctor/patient and

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teacher/student in which individuals interact only in terms of that part of their being which is relevant to the accomplishment of the particular task. This loosening of the social fabric, and the fracturing of human relationships to which it gives rise, recalls a Hobbesian world of human individuals desperately trying to realize their desires in a perpetual 'war of all against all'. In Pappenheim's words:

"So deep is the separation between man and man in *Gesellschaft* that...(it) becomes a social world in which latent hostility and potential war are inherent in the relationship of one to another."⁹

It might be argued that this is drastically overstating the case, but once the ethical bonds which tie people together in closely knit communities are broken, the way is clear for the atomization of social life in which the *pursuit of self-interest* becomes the organizing principle for *Gesellschaft* society. Tonnies sees this loss of the community, from which life derives its meaning, as the fundamental destabilizing force in the modern world. Moreover, unlike social theorists such as Marx and Durkheim, he sees social atomization as an enduring feature of social life as long as industrialism persists.

Social Ties and Homeostasis

Tonnies' picture of a world of individuals pursuing their objectives without concern for the needs of others, or their environment, is obviously far removed from Gaian homeostasis. The ethical and spiritual ties which lie at the basis of group unity are the social correlates of the regulatory mechanisms which ensure Gaian stability.

However, our acceptance of Gesellschaft as a basis for understanding the mechanisms underlying human relationships in industrial society does not unequivocally demand a return to the Gemeinschaft of a pre-industrial social order. Indeed Gemeinschaft undoubtedly imposes many constraints on individual freedoms, especially those which can broadly be described as the 'tyranny of custom'. But, the industrial social order has imposed a new and perhaps more dangerous tyranny - a tyranny of Gesellschaft institutions which have become more and more detached from life at the community, or what Illich calls the 'vernacular', level of society.10 Not only has this meant the virtual eclipse of community life, but also the fragmentation of society into discrete and relatively autonomous institutional complexes which are able to set standards in their respective areas of activity, relatively free from public assessment and control. As long as such institutional conditions prevail, the emergence of an holistic world view, such as that implied by Gaia, is unlikely.

The Fragmentation of Reason

If a future society based on the Gaian principles of interdependence, mutuality and interrelatedness is to be achieved, a reemergence of some form of *Gemeinschaft* is essential. But this cannot be accomplished without the expansion of reason from the narrow, pragmatic and essentially instrumental role it serves in modern industrial society. The division of the intellect in *Gesellschaft* society is exemplified for Tonnies by the ascendancy of 'rational' over 'natural' will, which denotes not only the dissociation of thought from being, but the paramountcy of thought over being in the modern world. Thought, or reason, thus



Emile Durkheim (1858-1917). Durkheim highlighted the alienating nature of industrial society, but he did not question the need for industrialization. (Credit: Open University Press)

becomes detached from its deep roots in culture and community from which are derived those values which give ultimate meaning and purpose to life. In such circumstances, reason can no longer carry out its former critical all-encompassing role in which judgements are made without making any distinction between ends and means.¹¹

In his differentiation between 'ontological' and 'technical' reason, which respectively parallels Tonnies' 'natural' and 'rational' will, Tillich has put the point well:

"According to the classical philosophical tradition (ontological) reason is effective in the *cognitive*, *aesthetic*, *practical and technical* function of the human mind...(but) in the concept of *technical* reason, reason is reduced to the capacity for reasoning. Only the *cognitive* side of the classical concept of reason remains, and within the cognitive realm only those cognitive acts which deal with the discovery of *means* for ends".¹²

Whilst the fragmentation of reason may have had its origin in the development of the natural sciences from the 17th century onwards, the narrowing of reason to primarily *technical* considerations has only become pervasive in industrial culture.¹³ The adoption of a mechanistic and reductionist approach in social theory, as in the natural sciences, cannot be reconciled with the holism of Gaia. Contemporary social theory at worst affirms the existing order of things; at best, it seeks to ameliorate the adverse effects of industrialism. What it does not — and indeed cannot do is direct its critique to the contradictions which lie within the structure of industrial society itself. "Weber did not face the future with any degree of confidence. For him the 'bureaucratization' of the modern world is likened to an 'iron cage' which steadily tightens its grip on human consciousness, and threatens some of the more substantive values of western civilization such as democracy, freedom, autonomy and individual creativity."

Weber's Critique of Formal Rationality

Weber (1864-1920) was perhaps the only 19th century social theorist who recognized the specific contradictions to which industrialism, as opposed to capitalism, gave rise. Like Tonnies and Tillich, Weber places the critique of reason at the centre of his analysis. For him, the relentless pursuit of profit and gain in the modern world, aided and abetted by developments in science and technology, has led to the displacement of 'substantive' rationality (Wertrational), in which human actions are given meaning within a broad framework of values. In its place emerges 'formal rationality' (Zweckrational), similar to Tonnies' 'rational will', and Tillich's 'technical reason', in which means take precedence over ends. The implication of this is that economic criteria such as efficiency, cost-effectiveness and utility become virtually redefined as ends, whilst the actual goals being pursued remain predetermined, and very largely unevaluated insofar as they are assumed to be furthering industrial growth and expansion. As Schumacher argues:

"Call a thing immoral or ugly, soul-destroying or a degradation of man, a peril to the peace of the world or to the well-being of future generations; as long as you have not shown it to be 'uneconomic' you have not really questioned its right to exist, grow and prosper."¹⁴

Weber recognizes, as does Tonnies, that the breakdown of community structures as a result of industrialization means that decisions can no longer be made with reference to the *totality* of social life. An industrial system, orientated as it is to the singleminded pursuit of *material* progress, has no place for a rationality which takes the overall interests of humanity into account. The rise of formal rationality thus automatically devalues the aesthetic, moral and spiritual dimensions of human existence, and introduces a destabilizing influence into the culture as a whole.

For Weber, formal rationality is manifested in the emergence of specialized bureaucratic institutions in key areas of social life, such as health, education, government and industrial production. Decisions made in any one institutional setting will tend to be made in isolation from other spheres of life, and will reflect what is expedient for the particular institution involved.

Weber did not face the future with any degree of confidence. For him the 'bureaucratization' of the modern world is likened to an 'iron cage' which steadily tightens its grip on human consciousness, and threatens some of the more substantive values of western civilization such as democracy, freedom, autonomy and individual creativity.¹⁵ Similarly, the emergence of scientifically-backed rationality, far from increasing our understanding of reality, precipitates a flight from religion, magic, folklore, legend and poetry. This is what Weber calls 'the disenchantment of the world', which is summarized by Brubaker:

"The rise of modern science leads to the 'disenchantment of the world' and creates a deep tension between the basic demand that life and the world have a coherent overall meaning and the increasingly evident impossibility of determining this meaning scientifically. The extension of scientific knowledge, to be sure, enhances man's rational control over social and natural processes. But while this control has made possible dramatic improvements in material well-being, it has also made possible the development of increasingly sophisticated techniques for the political, social, educational, and propagandistic manipulation and domination of human beings."¹⁶

Weber's critique of rationalization is important because it provides the first attempt to develop a theory of industrialization which goes beyond a specific analysis of capitalism. Saint-Simon, Comte and Durkheim never properly addressed the inherent problems associated with progressivism in the modern world; and Marx, whilst fully appreciative of the inner contradictions of capitalism, looked optimistically to a future emancipated society in which all would gain from the fruits of industrial expansion. It is unfortunate that, because of his commitment to a value-free social science, Weber was not able to develop his ideas within the broad framework of a critical theory of society. However, his analysis of rationalization, together with Tonnies' notion of *Gesellschaft*, gives crucial insights into the fragmented nature of society.

Illich's Critique of Advanced Industrial Society

Illich has extended Weber's somewhat generalized critique of the rationalization and bureaucratization of modern life by placing the concomitant phenomenon of professionalization at the centre of his analysis. According to Illich, the rapid growth of a technocratic elite, equipped with professional and technological expertise from which the layperson is excluded, has meant that institutions have increasingly become controlled by professionals who have been able to achieve a "monopoly over the social imagination, setting standards of what is valuable and what is feasible".¹⁷ This 'institutionalization of values', is a process by which the institutional imposition of values abrogates a fundamental human freedom: namely the basic right of individuals to determine their own needs in a given social milieu. Most of the more important spheres of life have been affected by this process - education, medicine, transport and religion, as well as industrial production.

Associated with the institutionalization of values is Illich's notion of 'radical monopoly'.¹⁸ This is a situation in which human perception of reality is so constrained that no alternative to the meeting of a given need is seen other than through the consumption of the 'product' of a particular institution. This is not the same as an ordinary monopoly in which a specific product may dominate the market. For instance, Coca-Cola might establish a monopoly in the soft drinks industry; but as long as people believe that they can quench their thirst in other ways, the monopoly has not taken on a 'radical' form. But it will take this

form once people think that their thirst can be assuaged only by consuming Coke.¹⁹

For Illich, education and professionalized health care are clear examples of radical monopolies in the service sector. General Motors and Ford are comparable examples in manufacturing because they can so 'manipulate public taste' that there is hardly any conscious awareness of alternatives to the motor car as a means of transport.²⁰

It is clear from Illich's analysis that radical monopoly is a central feature of the process of industrialization. By transforming needs into commodities, "people are conditioned to *get* things rather than to *do* them; they are trained to value what can be purchased rather than what they themselves can create. They want to be taught, moved, treated, or guided rather than to learn, to heal, and to find their own way."²¹

Once the creation of human needs is detached from a meaningful societal or cultural context, and redefined in an institutional setting, the *means* for the attainment of such needs, rather than the needs themselves, become the prime focus of attention. Following Weber, the environment is ideal for the application of formal rationality, in which technical considerations of efficiency and economy take precedence over substantive human interests.

A Gaian Social Order

From the writings of Tonnies, Weber, and especially Illich, certain broad principles can be discerned which are essential if the anti-Gaian tendencies in modern society are to be overcome.

All three writers argue that fragmentation is an inherent characteristic of the industrial social order. Tonnies' distinction between *Gemeinschaft* and *Gesellschaft* is particularly important because it exposes a fundamental paradox of industrialism: the extent to which the individual has been both centralized and marginalized in modern society. Whilst the attenuation of *Gemeinschaft* ties might appear to give individuals greater personal freedom and licence to pursue their own ends, in fact the emergence of *Gesellschaft* institutions objectifies the relationships people have with each other and intensifies individual feelings of isolation and alienation. The disunity to which this gives rise is expressed by Tonnies:

"In the *Gesellschaft*, as contrasted with the *Gemeinschaft*, we find no actions ... which manifest the will and spirit of the unity even if performed by the individual; no actions which, in so far as they are performed by the individual, take place on behalf of those united with him. In the *Gesellschaft* such actions do not exist. On the contrary, here everybody is by himself and isolated, and there exists a condition of tension against all others."²²

The undermining of the spiritual and ethical dimensions of human life, upon which social unity must ultimately depend, concentrates the search for meaning almost exclusively in the material realm of human existence. The implication of this, as Illich has so forcefully argued, is that people increasingly come to associate the 'good life' with an ever-increasing supply of goods and services produced by the institutions of society. In such circumstances, no ethical imperatives are attached to consumer behaviour other than the exhortation to consume. Consumption thus becomes an end, rather than a means, and ties consumers not just to their possessions, but also to the virtually unconscious ideology of consumerism upon which the very existence of advanced industrial society depends.23 Such a society "is dynamically unstable. It is organized for indefinite expansion and the concurrent unlimited creation of new needs, which in an industrial environment soon become basic necessities".24

For Illich, expansionism is the ultimate hubris of humanity. We are finite in our capacities, and face the certainty of death. Yet in

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Contemporary social theory at worst affirms the existing order of things; at best, it seeks to ameliorate the adverse effects of industrialism. What it does not — and indeed cannot — do is direct its critique to the contradictions which lie within the structure of industrial society itself. (Photo: Mark Edwards/Earthscan)

our desire to manipulate and control the world we act as though we have the immortality of the gods. We arrogantly assume that the answers to our mounting environmental problems are forever in our grasp. By narrowing the scope of reason to purely instrumental considerations we extract lead from petrol, but keep cars on the road; introduce 'environmentally friendly' products onto the market, but encourage businesses to grow; and respond to an industrial disaster such as Chernobyl with the promise to tighten safety regulations, but take no steps to abandon the use of nuclear power. Many such examples could be given, but what they tell us is that no attempt is made by policy makers and others, in a social milieu in which the ultimate priority is given to material growth, to look behind the superficialities of the society to the deep structures which lie below. What distinguishes Illich's social theory, and to a lesser extent that of Tonnies and Weber, from mainstream social theory, is that the full thrust of Illich's analysis is addressed to these underlying structures.

Fromm has commented on Illich's approach as follows: "Everything must be doubted, particularly the ideological concepts which are virtually shared by everybody and have subsequently assumed the role of indubitable commonsensical axioms. To 'doubt' in this sense (implies) . . . the readiness and capacity for critical questioning of all assumptions and institutions which have become idols under the name of common sense, logic, and what is supposed to be 'natural'".²⁵

We are indebted to Illich not only for his sharp insights into the alienating institutional structure of industrial society, but also for his attempt to establish principles for the construction of what he calls a 'convivial' society. Illich's studies in health, education and transport are paradigmatic illustrations of his more general point that the industrial mode of production, with its *inherent* tendency to promote the meeting of need through institutions rather than individuals or communities, must inevitably lead "to the degradation of the cultural ecology necessary for satisfactory activity outside commodity-monopolized spheres".²⁶

In effect, an individual's capacity to derive personal *satisfaction* from the meeting of need recedes in inverse ratio to the increasing prevalence of needs 'satisfied' through the acquisition of commodities, whether of goods or services.²⁷ It is thus necessary to establish broad parameters for the growth of a favourable cultural environment within which the individual can recover the power both to articulate *and* to satisfy needs free from commodity monopolization. The adequacy of any theory of a future society must therefore lie in its ability to define clear limits to institutional growth.

Natural Limits

Both Tonnies and Weber were concerned at the extent to which institutional growth had eroded basic human freedoms in the modern world. But Illich is not prepared to let the matter rest there. For him, the discovery of 'natural scales and limits' to human endeavour in all spheres of life is of vital importance if we are to take the path towards 'convivial reconstruction' in which individual autonomy over the determination of need, and social and ecological balance, are to be achieved. Thus:

"We must come to admit that only within limits can machines take the place of slaves; beyond these limits they lead to a new kind of serfdom. Only within limits can education fit people into a man-made environment; beyond these limits lies the universal schoolhouse, hospital ward, or prison. Only within limits ought politics to be concerned with the distribution of maximum industrial outputs, rather than with equal inputs of either energy or information. Once these limits are recognized, it becomes possible to articulate the triadic relationship between persons, tools, and a new collectivity. Such a society, in which modern technologies serve politically interrelated individuals rather than managers, I will call 'convivial'."²⁸

A convivial society, which has no place for the externalization of authority and the institutional determination of needs, is far removed from the structures familiar in industrial societies today. Similarly, Illich's suggestion that our technologies should be fully accessible to every member of the community so that they would add to, and not detract from, each person's potential for self-development and creativity, would be hard to reconcile with our everyday experience of modern life. For instance, what control do we have over the giant machinery working on the new building or motorway site; or the high technology in use in the modern hospital or nuclear power station? But Kumar's comment on Illich's analysis is apposite:

"This may seem familiar utopian stuff. What gives it a concreteness and a foothold in contemporary reality are various indications that industrialism is in a state of genuine crisis, and that certain varieties of utopian thought, new or traditional, might now have a relevance previously denied them by the powerful currents of a developing and triumphant industrialism".²⁹

A Gaian Sociology

Illich's notion of conviviality correlates closely with a Gaian perspective. Unlike mainstream social theory, it posits the inter-

connectedness between the individual and social and physical reality. As Illich argues:

"I choose the term 'conviviality' to designate the opposite of industrial productivity. I intend it to mean autonomous and creative intercourse among persons, and the intercourse of persons with their environment . . . I consider conviviality to be individual freedom realized in personal interdependence and, as such, an intrinsic ethical value."30

It seems that there is a creative resonance, or symbiosis, between individuals in a convivial society so that freedom for one is equated with a like freedom for all. Positive expression is thus given to the dynamics of freedom as it is lived in the interrelatedness of human beings, both with each other and with their physical and social environment. In such circumstances, the presumed duality between individuals and social and physical reality collapses and cooperation, rather than competition, becomes the organizing principle for social life.

Expressed in this way, conviviality comes very close to Gaia. Moreover, the presumption of interdependence as an 'intrinsic ethical value' has important implications for a reappraisal of humanity's attitude to nature and society. Once we perceive ourselves as integrated into social and physical reality, it would be absurd to claim that our actions towards both society and our environment are not ethically based. On what grounds, for instance, can we justify a course of action which disturbs irreversibly the delicate and complex interrelationships upon which we as part of the overall web of life depend? Is not a respect for all aspects of reality a fundamental moral value, with its rejection being the very denial of Being?

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Indeed if we assume that the whole of reality is interconnected, we must, as Schumacher has argued, develop a holistic wisdom which passes beyond the mere acquisition of instrumental knowledge.31 Our ethical horizons must expand from the immediacy of our surroundings to embrace a planetary, even cosmic, consciousness. In his attempt to lift these horizons, Roszak suggests:

"There is a planetary dimension to the spreading personalist sensibility which links the search for an authentic identity to the well-being of the global environment. The scientific status of this connection between person and planet can only remain speculative . . . but I have little doubt that, within the next generation, there will emerge a well-developed body of ecological theory that illuminates this subtle interrelationship and gives it enough political force to displace the inherited ideologies of industrial society . . . Perhaps even the hard sciences of the Western world will find their way to a personalist paradigm that unites the knower and known in a vital reciprocity ... Meanwhile ... my argument is that the needs of the planet are the needs of the person. And, therefore, the rights of the person are the rights of the planet".31

Since these words were published ten years ago, Lovelock's Gaia hypothesis has come into prominence. Perhaps the scientific status of Roszak's words has already passed from speculation to reality?

This is a shortened and edited version of a paper given at the Third Annual Symposium On the Gaia Thesis and its Implications, 8-10 November 1989, Worthyvale Manor, Camelford, Cornwall, England.

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Guilty Until Proved Innocent

NO TIMBER WITHOUT TREES, by Duncan Poore, Earthscan Publications, London, 1989, £9.95 (pb), 252pp.

No Timber without Trees is the publication in book form of a study carried out by the International Institute for Environment and Development (IIED) for the International Tropical Timber Organization (ITTO), the body which promotes trade in tropical timber. The main questions it attempts to address are; is there such a thing as sustainable logging in tropical forests? What does 'sustainable' logging mean? And what are the main obstacles to achieving it?

Duncan Poore, the principal author of the book and leader of the study team, comes to the task with a formidable record. He has been Professor of Botany in Malava, Director General of the International Union for the Conservation of Nature and Director of the Commonwealth Forestry Institute at Oxford. The conclusion of the report, which was presented to the ITTO in June 1989, has already made conservation history. After a detailed analysis of the majority of the main producers of tropical timber worldwide, it concluded: "The extent of tropical moist forest which is being deliberately managed at an operational scale for the sustainable production of timber is, on a world-scale, negligible." The study found that less than one-eighth of one percent of tropical forests where timber extraction is occurring, were being logged sustainably.

The ITTO has therefore been put in something of a quandary. While its main task is to promote the trade in tropical timber, the organization is also mandated to encourage the sustainable use and conservation of tropical forests and their genetic resources, and to maintain ecological balance. With Poore's results demonstrat-

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ing that present day logging practices are indisputably over-harvesting the forests, the two objectives appear to be completely at odds. The timber trade is destroying the forests. No surprise, then, that many environmental campaigning organization's have called for a halt to logging in natural or primary forests.¹

Poore's book — on the face of it an objective and scientific tract - almost unintentionally reveals itself to be part of a campaign with a definite aim. For, as Poore lets slip in his concluding chapter, his aim is to "generate a sense of urgency but qualified optimism" about the timber industry. He thus offers the ITTO a way out of its dilemma. The book asks why tropical forestry has so manifestly failed to look after the resources in its care and whether this can be corrected, and suggests that it can be. The study notes that while almost no forest is managed sustainably at present, a significant proportion of forest nearly is, and given the right conditions, could be made so.

Poore is following a calculated but dangerous strategy. His aim is to persuade the ITTO and the governments of timber producing countries that forest conservation and logging are compatible, that sustainability is a realizable objective. Yet, if Poore is wrong and sustainable logging is an illusion, then encouraging logging, rather than calling for its halt, is bound to hasten the forests' demise. Trying to work out the reasoning behind Poore's position is thus critical, not just for the future activity of the ITTO but of the forests themselves.

Central to Poore's argument is the notion that only if forests are economically valuable will governments take steps to conserve them.² The second assumption is that the extraction of timber is the best way to give them such a value. Although the book notes in passing that forests are valuable for other reasons, not least their ecological functions, the emphasis on timber production is never really questioned.

No Timber Without Trees, however, does not attempt to justify its premises, but presses on with setting out the pre-conditions for the management of forests for the sustainable production of timber. Again, we are drawn immediately down the conventional path. While passing reference is made to alternative systems of forest ownership and the possibilities of community logging, the basic model assumed by the book is that of classical forestry whereby the state arrogates forest land to itself, classifies it as Permanent Forest Estate and, by means of a forestry service, attempts to regulate timber extraction carried out by private companies. Logging is an enterprise between big business and

government and the book gives painfully little attention to the question of whether the industry ever benefits anyone but a small élite.

Misplaced Confidence

The central chapters of the book examine the status of forestry around the tropics. Simon Reitbergen provides a very valuable overview of the timber industry in Africa, particularly useful for the breadth of issues touched on. Timothy Synnott examines the situation in Latin America and the Caribbean from a more technical point of view. PF Burgess provides a summary of forestry in Asia, where despite the existence of large areas of dipterocarp forests, which contain a very high proportion of marketable species compared to Africa and South America, logging has proved to be unsustainable. Poore himself devotes a chapter to the anomalous case of logging in the tropical moist forest of Queensland, Australia, which, controversially, he classes as sustainable, commercial logging.3 A wide-ranging chapter by John Palmer provides a commentary on sustainable logging, summarily reviewing some of the extraneous factors that influence tropical forestry - social, cultural, demographic and economic - as well as elaborating on the technical and institutional essentials for sound management.

Based on these studies and the considerable experience of the authors, Poore sets out the main conditions for ensuring sustainable logging. These boil down to: a firm political resolve by government to achieve sustainability; secure permanent forest estate; an assured and stable market; adequate resources; and good research and information to allow sound planning, silviculture and management. Whereas Reitbergen honestly notes that "if any one of these conditions ... is not fulfilled, then the tropical moist forest will continue to be pillaged for short term gain", Poore appears to harbour fewer doubts. In a penultimate chapter, remarkable for its misplaced confidence in the Tropical Forestry Action Plan (see Marcus Colchester and Larry Lohmann, this issue) and the ITTO, he boldly asserts that "the sustainable management of natural forest for timber production is one of the keys to forest conservation and to the timber trade."

Political Obstacles

The most disturbing aspect of the book must be that, despite its evident scientific

competence, it fails even on its own terms. For, as Poore notes in the first chapter, the technical constraints to achieving sustainable logging "although they certainly exist, are much less important than those that are political, economic and social". Given such an opening remark, we should reasonably expect the book to look closely into these obstacles to sustainability and, more important still, set out ways of overcoming them.

The reader will be disappointed. Not that the political obstacles to sustainability are not hinted at in the book. Corruption; politicians' tendency to act to maintain power in the short term rather than ecological balance in the long term; the fact that the political process is increasingly dominated by the market demands of urban élites rather than the rural poor; the lack of continuity and funding in forestry departments; the unpopularity and marginal status of forestry services; the fact that civil services are notably unresponsive: all these and more get a mention, but nowhere is it examined how we may overcome them.

And so it is with the economic pitfalls in the way of sustainability. The main barrier would seem to be that, so long as the timber market is partially supplied by the first cut from virgin forests and from lands which are being cleared for agriculture, sustainable production will be financially uncompetitive and therefore unviable. As John Palmer notes, the low rate of return and the long payback period makes sustainable logging an unattractive private investment. Forest mining on the other hand can be very lucrative. Logging today is dominated by "the logger who passes through the forest once and buys hotels in Hong Kong on the sale of raw logs."

Here, then, we are at the crux of the forester's dilemma. How can we secure economic and financial policies which do not require more from the forest than it can yield sustainably, when profitability and acceptable returns on investment demand overharvesting? The book offers no answers.

Opening Up the Forests

The main reason that logging has led to wide-scale forest destruction is that logging opens up previously isolated and inaccessible areas to colonization. In Africa, as Reitbergen notes, the heterogeneity of the forests coupled with the costs of transport has meant that much logging in the interior has been very selective, taking out only the best quality timber over very wide areas. Yet, paradoxically, this has made it more, not less, destructive: 'permanent forest estate' opened to logging has quickly become permanently deforested as the settlers flood in along the logging roads. Resolution of the problem of landlessness may appear to be beyond the immediate scope of such a study. However, so long as settler pressure continues to be the main problem facing tropical forestry today, any advocacy of continued logging must come up with a socially and politically acceptable means of preventing access to forests. This book makes no such attempt, merely noting that secure permanent forest estate is an essential condition for sustainability.

What About People?

It was over 20 years ago that Jack Westoby, a former Director of Forestry at the FAO, reflected that:

" I had occasion to discuss forestry with . . . foresters of every conceivable specialization. Had I believed implicitly everything they told me, I would have been driven inexorably to the conclusion that forestry is about trees. But of course, this is quite wrong. Forestry is not about trees, it is about people. And it is about trees only insofar as trees can serve the needs of people."⁴

This is not a lesson that the author of *No Timber Without Trees* pays much attention to. Although Poore makes welcome reference to the need to respect forest peoples' rights, the book deals extremely superficially with the social dimensions of forestry and one is led to agree with the Australian forester Alf Leslie that "whenever conventional forestry places the wellbeing of forests above the welfare of people generally, it has an inherently antisocial tendency."⁵

In sum the book fails to address the main argument of those proposing a ban on logging in primary forests — namely that conventional forestry cannot hope to manage forests sustainably so long as the pressures of the market, the high rate of return expected on capital investments and the political unreality of expecting centrallyrun government departments to manage forests in ways that benefit local people and their environment, jointly conspire to cause both overharvesting and forest destruction.

If this book had explicitly admitted the limited scope of its enquiry and the partial nature of its recommendations it would not deserve such censure. For this is undoubtedly a valuable work, liable to be an important source book as well as a benchmark in the continuing debate about sustainability. However, by making far-reaching recommendations while evading the real problems plaguing forestry, the book plays into the hands of those who favour 'business as usual' and the 'technical fix'. This will only delay the international timber trade and the ITTO from making the radical reforms necessary to curb deforestation. Wiser counsel, based on the precautionary principle, would assume that logging is guilty until proved innocent.

Marcus Colchester

Marcus Colchester is an Associate Editor of **The Ecologist**. He works for the World Rainforest Movement.

Notes and References

1. For example a recent report from Friends of the Earth calls for "timber production to be switched forthwith from primary forests to secondary forests with special emphasis on sustainable use" (Myers, N., *Deforestation Rates in Tropical Forests and their Climatic Implications*, Friends of the Earth, London, 1989), a position recently endorsed by HRH Prince Charles in his 'Rainforest Lecture' at Kew Gardens on 6 February 1990.

2. Poore's tantalizing admission that "unfortunately all the arguments about raising the worth of forest products are potentially flawed" (p.204) is not explained. Despite his doubts, he is not diverted from the main thrust of his argument.

3. The forestry service managing the Queensland logging was heavily subsidized by Government, raising doubts about whether the logging can fairly be described as 'commercial'. Australian environmentalists have likewise challenged Poore's conclusion that the logging was sustainable. It has, in any case, now been stopped.

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The End?

THE END OF NATURE, by Bill McKibben, Viking, London, 1990, £12.95 (hb), 212pp.

Much hype has surrounded the publication of *The End of Nature*. It was serialized in The New Yorker, and in Britain it was launched at a reception in the House of Commons. McKibben's book has, it is claimed, drawn attention to impending ecological catastrophe in the same way that Jonathon Schell's *Fate of the Earth* warned of the danger from the nuclear arms race.

It is not difficult to appreciate why *The End of Nature* has been singled out for special attention. It is a very powerful book, judiciously blending the author's own personal experiences in the Adirondacks with well-chosen facts and figures from the relevant literature. In particular, it communicates a very tangible sense of humanity standing on the threshold of unleashing a chain reaction of ecological disasters.

Of course, orthodox politicians, the scientific establishment and all the others who once rubbished the *Limits of Growth* and the *Blueprint for Survival* will accuse Bill McKibben of crying wolf. It is true that the warnings of the early 1970s and the initial clamour they provoked died away. But the 1990s will be the decade of the crunch, when we will have to take the necessary decisions or it will be too late.

McKibben focuses upon the disruption of the atmosphere, in particular, the buildup of the 'greenhouse' gases and the depletion of the ozone shield. Though I would have welcomed more emphasis on the relentless erosion of topsoil and the accumulation of toxic poisons in food chains, McKibben makes a strong case for putting climatic change to the top of the agenda. In any case, the exact form and timing in which excessive human pressures on the biosphere manifest themselves is less important than the fact that the present mix of human numbers and lifestyles has reached, or is about to reach, the point of overshoot.

But for all its qualities, *The End of Nature* left me with nagging doubts about its basic approach. McKibben is not clear what exactly constitutes 'nature'. He writes as if it is basically a state of mind. McKibben tells the story of a fall from grace in which we humans progressively violate what was once an unsullied paradise, now gone for good. But all species modify their environments. Beavers for example, build dams. Nature is about coevolution in which life interacts with other forms of life and upon the physical environment. The key issue is whether what we humans do is destroying those processes that sustain life on earth. Put more precisely, our crisis is a crisis of entropy taken in its broadest meaning not just of energy losses and material dissipation but overall loss of order. By comparison with beavers' dams, large hydroelectric schemes are highly entropic. If we fail to make distinctions of this kind we will be left defending an untenable position about some fixed 'balance of nature'. It robs us of our most powerful argument against the many people who, as McKibben himself notes, defend the technological monstrosities around us by saying that we are part of nature so that anything we do is, ipso facto, natural.

McKibben portrays the main consequence of human-caused environmental change as metaphysical, as a loss of a sense of the divine. The central sections of the book in particular suffer from ill-focused philosophizing. "How can we be humble in any way, if we have taken over as creator? Perhaps it is all for the best... but it seems infinitely sad."

I wonder whether here lies the deep appeal of the book in the media and literary circles where it has been acclaimed. If, as parts of *The End of Nature* suggest, the game is soon going to be up, why bother? Why not just get on with living from one day to the next? The book could be read as a perfect rationale for burying one's head in the sand. Yet, apocalyptic though its warnings might be, *The End of Nature* also manages to offer the distasteful but ultimately comforting thought that we can survive in a "synthetic Eden".

McKibben pays inadequate attention to the way in which forces destroying the environment are also destroying purely human relationships within society, of which the incidence of violent crime, the divorce rate and the level of mental illness are only some indicators. Since the word 'green' is now being confined to nothing more than reducing the worst pollutants and setting up the odd extra nature reserve, it is even more important to stress that the Green approach walks on two legs, those of the conserver and the convivial society. The upheavals in Eastern Europe also give me more cause for hope about the possibility of dramatic change than McKibben deems possible.

For all its virtues, I hope *The End of Nature* is the end of this kind of work. There is a limit to growth in the number of books we need about what is wrong. It is time to focus upon how to put things right. This task is a two-fold one. First, there is an urgent need to dissect pseudo-explanations and pseudo-solutions. In the former category come those who seek to blame everything upon one factor, usually the economic system. In the second are to be found the techno-fixers, market reformers and social engineers who claim that some finetuning here and there can keep the engine running smoothly.

Many people want to believe that we can, for example, invent our way out of trouble. Others believe that making polluters pay will cure our ills. In a review of *The End of Nature*, Britain's 'green' Environment Minister Chris Patten, demonstrated the same old killing conceits when he announced the answer was to be found in the 'triumph of reason'.



In particular, we need to look more closely at the concept of 'sustainability', for I suspect that in the 1990s it will provide the battleground on which the green and born-again grey visions fight it out.

Still more important is the fleshing out of the nuts and bolts of the Green Alternative. Many people are already worried by the dangerous developments that McKibben describes. But what they want is more solid proof that there are practicable alternatives, not just the broad sweeps of the pen with which *The End of Nature* concludes. This is where the real work must intensify.

Sandy Irvine

Sandy Irvine is an Associate Editor of The Ecologist. He is co-author of A Green Manifesto (Optima, 1989) and author of Beyond Green Consumerism (Friends of the Earth, 1989).

Economic Aesthetics

THE ECONOMY OF THE EARTH; Philosophy, Law and the Environment, by Mark Sagoff, Cambridge University Press, 1988, £25/\$29.95 (hb), 271pp.

A society's environmental statutes, regulations and controls reflect in the profoundest sense our views as citizens about the "natural, the tranquil, the beautiful and the very long run". But by insisting that policy decisions should be based not on our values as citizens but on our preferences as consumers - in particular, our willingness to pay for pollution control and beautiful landscapes - economists threaten to replace our political and ethical concerns with criteria that are arbitrary and meaningless. The Economy of the Earth is essentially a critique of this latter approach and the assumptions which lie behind it. The book is also, however, an appeal for a reassertion of the "democratic processes" which should rightfully determine the goals of social regulation, rooted in the "virtues of deliberation" - open-mindedness, attention to detail, humour and good sense.

Sagoff's analysis of welfare economics and its methods pulls no punches. He claims that economists commit a "category mistake" when they ask people for their willingness to pay for unmarked goods such as clean air and water because 'they ask of objective convictions and beliefs a question that is appropriate only for subjective wants and desires". People are understandably nonplussed when asked how much they would be willing to pay to preserve clean air in the US national parks. Until then they naturally assumed the issue had already been settled through public debate and litigation and enshrined in the Clean Air Act. One is reluctantly reminded of Oscar Wilde's dictum that an economist is "someone who knows the price of everything, but the value of nothing".

According to Sagoff, economists fail to grasp that people have separate, sometimes contradictory, roles as consumers and as citizens. There are decisions which we make as a community which override individual wants and preferences. An attempt to derive society's goals simply by aggregating individual consumer preferences — the first instinct of every welfare economist — is consequently deeply flawed. Social regulation is properly directed at making society better, not more economic.

But Sagoff's critique of welfare economics goes deeper than this. Economists, he argues, mistakenly believe that strict criteria for social choice can and should be laid down in advance. They maintain in particular, that society should seek to maximize efficiency in the way it allocates resources. In reality, however, decisions about social regulations are rarely made in such a narrowly 'rationalist' manner. In an analysis heavily influenced by the liberal political philosopher John Rawls, Sagoff claims that we should worry less about prescribing public choices and more about ensuring that the basic structure of social institutions is right: that is, that it is one which allows individuals to make collective choices that are fair to all. Economists have a role, not in making the decisions themselves, but in furnishing information about the means to achieve ends, especially the most cost-effective means. We need cost-effectiveness analysis instead of cost-benefit analysis.

This book provides economists with a considerable challenge, not just to the techniques and methods which economists employ, but also the assumptions and theories which justify their use. It will be interesting to see whether it sparks a debate in the wake of the much publicized 'Pearce Report' (published by Earthscan as Blueprint for a Green Economy, 1989), which in itself is firmly rooted in the assumptions and methodologies of neo-classical economics. For all this is a persuasive and often a passionate book, one is left wondering whether Sagoff's faith in 'democratic processes' is entirely realistic. The author is clearly writing within a North American context, and indeed frequently refers to the way environmental laws express Americans' perceptions of themselves as a nation. His arguments may have a hollow ring in less democratic societies. On the other hand, perhaps this is the message of the book — that we cannot have environmentalism without the proper democratic structures and processes which enable ethical and aesthetic choices to be made.

The Economy of the Earth is written in a lively, anecdotal style and Sagoff has an enviable ability to explain in simple terms what are often arcane economic and philosophical concepts. It is a remarkable book and should be read by anyone who has ever had misgivings about the growing influence of economists in the environmental arena. Pity the poor economist who has only the jargon of neo-classical economics with which to defend himself.

Clive Potter

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Mr Button's Mrs Beeton

HOW TO BE GREEN, by John Button, Century Hutchinson, London, £4.99 (pb), 1989.

It seems that John Button is rapidly establishing himself as the Mrs Beeton of the Green movement, setting out good, green practice for us all to follow; recipes for green living seasoned with a strong moral flavour. What is more, he does it with a lightness, yet firmness, that encourages willing conversion. Most of those who read *How to be Green*, will be converted already; others may reach for it with a cynical disbelief in its message. But few will be able to contradict the common sense which flows from every page.

The book is laid out in a clear orderly fashion. Under each of the twelve main headings is a list of topics, quickly guiding one to the appropriate reference. For example, the first chapter, 'Home Conservation' covers: 'The energy equation'; 'Home insulation'; 'Heating your home efficiently'; 'Saving water'; 'Labour savers or millstones?'. Other chapters include Gardening, Food, Children, Clothes, Transport, Work and Money and much more. Each subheading is dealt with in a simple, double-page format: the facts; what needs to change; what you can do; and who benefits.

This proves to be a remarkably efficient way of getting the message across. Mr Button, for all his gentle approach to life, knows the hard facts and manages to include many of them in easily digestible form throughout the book, with references and additional reading. The final chapter, 'Press for Action', dispenses with the standard format and discusses how the individual can take matters further by communicating with others by word of mouth, in writing, or via TV and radio; knowing what your local councils are up to; lobbying your MP; joining a pressure group or political party to work together with others. According to Button, "accurate and pertinent information is true power".

John Button is a firm believer in personal development and relationships. He shows how we can all benefit from being more considerate of ourselves, our fellow creatures and the environment. He emphasizes the holistic approach, whilst telling us a thousand ways that we can do something to save the planet and create a "manner of living which is outwardly more simple and inwardly more rich".

My only real reservation about the book is that it lacks balance. Extensive and vitally important subjects like education get the same space as bottle banks. The former, which might have had a chapter to itself, is placed under 'Children', despite its heading, 'Learning - a lifelong process'. The result is sketchy, to say the least, and leads to some questionable generalizations, for instance: "Whatever happens to our education system, the attention it is currently receiving can only be a good thing." For a book that recommends inner richness and quality rather than quantity, it is strange that the arts do not get a look in at all, unless you count watching television.

Although Button does point the need for greater involvement, I feel the book tends to play down the urgency of the crisis that we are facing. The cataclysmic problem of human population, for example, only gets two pages under 'Children', subheading, 'Planned Parenthood'. "Population planning must be a prime concern" has all the force of saying to someone, 'excuse me, you are driving over a cliff'.

There is a charming whimsicality which breaks through occasionally, and adds to the pleasure of reading this book. I was especially pleased to be told to "eat as much fresh food as possible."

How to be Green is full of good common sense backed up with facts and figures sufficient to convince most doubters, and will be invaluable for campaigners. Following its advice will keep us all on the green straight and narrow, a vital, personal commitment to the planet.

Alec Ponton

Alec Ponton is co-author of A Green Manifesto (Optima, 1989).

BOOKS DIGEST

Books which are covered in the digest may be given full-length reviews in forthcoming issues.

 RETURN TO THE GOOD EARTH: Damaging Effects of Modern Agriculture and the Case for Ecological Farming, A Third World Network Dossier, Penang, 1989, Malaysia/Singapore/Brunei M\$50, Third World countries US\$20, Other countries US\$25, 570pp. Available from Consumer's Association of Penang, 87, Cantonment Road, 10250 Penang, Malaysia.

A comprehensive digest of articles, reports and cuttings from magazines, journals and newspapers. The dossier includes chapters on the impact of modern agriculture on the society and environment of the Third World, the Green Revolution, seeds and genetic imperialism, the biotechnology threat, and traditional/organic methods of farming.

AFRICA BEYOND FAMINE: A Report to the Club of Rome, edited by Aklilu Lemma and Pentti Malaska, Tycooly Publishing, London and New York, 1989, 347pp.

This collection of 22 essays from development specialists and academics examines the underlying causes of famine in Africa from a holistic viewpoint, fitting it into its social and political context. The editors conclude that the famines of sub-Saharan Africa are largely man-made, and that Africa has the resources to meet the goal of self-reliant material and social development. A conceptual framework for achieving this goal and an agenda for action are proposed.

PESTICIDE USERS' HEALTH AND SAFETY HANDBOOK: An International Guide, by Andrew Watterson, Gower, Aldershot, 1989, £30 (hb), 504pp.

An invaluable reference work for anyone interested in pesticide issues. The first section of the book gives an overview of pesticide toxicity, the costs and benefits of the use of pesticides and the alternatives to widespread pesticide application. The second section consists of data sheets on over 200 pesticides, giving their uses, their health and environmental effects, user safety and the regulatory controls which apply to them around the world.

 THE EARTH REPORT 2: Monitoring the Battle for our Environment, edited by Edward Goldsmith and Nicholas Hildyard, Mitchell Beazley, London, 1990, £8.95 (pb), 176pp.

An updated version of this invaluable reference book which includes alphabeticallyarranged, cross-referenced articles on over 400 topics related to the environmental crisis and its solutions. The *Times Educational Supplement* wrote of the first Earth Report: "It is a relief to find writers who do not insult the intelligence of their readers ... (the editors) make a decent and clearly written attempt to bring matters of concern to the public attention."

 IN THE U.S. INTEREST: Resources, Growth, and Security in the Developing World, edited by Janet Welsh Brown, World Resources Institute/Westview Press, Boulder, Colorado, 1990, 228pp.

Studies from Mexico, the Philippines, Egypt and Kenya, present the case that the Third World's environmental problems need to be solved as they could harm US jobs, and 'national security', which apparently depends on "the stability, growth, and self-confidence of numerous key nations in Latin America, Asia and Africa." According to the chairman of The National Bank of Washington: "Those concerned with investment prospects in Latin America, Africa, and Asia will find this book of great interest."

 CLIMATE AND ENERGY: The Feasibility of Controlling CO₂Emissions, edited by P.A. Okken, R.J. Swart and S. Zwerver, Kluwer Academic Publishers, Dordrecht, The Netherlands, 1989, £49.50/\$77 (hb), 267pp.

A review commissioned by the Dutch Environment Ministry of the various technical measures available to cut carbon dioxide emissions. The final section, on policy options, states: "The conclusion is that the plan (to drastically cut CO₂ emissions) will not be executed. It is better to prepare society for the coming climate change. This means, for example, increasing the height of dikes, and making cooling equipment. These things one can see and feel, just as the consequences of a hurricane."

Patrick McCully



The Skeleton in the Environmental Closet

Dear Sir,

Your otherwise excellent open letter to Mrs. Thatcher (Vol. 20, No. 1, January/ February 1990) claimed that you, "in no way wish to underplay the problem of population growth". I am afraid that the overwhelming weight of your argument does give excessive emphasis to other factors in the equation of ecological ruin.

The population issue has truly become what Garrett Hardin once called "the Skeleton in the Environmental Closet". The Ecologist has in fact devoted more space to articles on Art than to what is the greatest long-term threat to the future of human and nonhuman inhabitants of the Earth.

It now takes less than five days for the world's population to increase by one million. In 1987, the world's population grew by some 90 million. It is not simply a Third World problem. Britain's population rose last year to 57.1 million, with the crude birth rate increasing by 1.8 per cent, a continuation of a trend over the last five years. Across many rich countries, another yardstick, the total fertility rate, has been registering increases, against the expectations of the past. Many governments (for example, those of Sweden, Germany and Malaysia) are actively trying to encourage population growth.

Population growth magnifies the impact of the other two key factors in the demands we place on the environment — per person consumption levels and technological choice. It cancels out improvements in pollution control gadgetry or less wasteful lifestyles. And let us be honest, since I am writing this letter on a word processor listening to my compact disc player, some degree of material affluence does bring satisfactions and wellbeing ... all of which brings us back to the choice between quantity of human numbers and quality of individual lives.

Although you rightly point out that the rich countries consume far more resources per person than elsewhere, in the end it is total throughput of energy and raw materials in the human economy that matters. In an ideal world, a global redistribution of wealth might provide resources temporarily for more people but it would still only postpone the day of reckoning. Ultimately, any such redistribution, without population stability, would only produce universal poverty accompanied by environmental ruin. It is also true that measures such as land redistribution are desperately needed. Yet, in countries such as El Salvador, present population growth would absorb all the benefits of such reforms within a generation.

It is true that people like Mrs. Thatcher use the population argument in an attempt to draw attention away from the role of exploitative and oppressive institutions, lifestyles and social values which they support. But this does not change the fact that human numbers *do* count.

There are many who hide behind accusations of ecofascism to avoid facing reality. They should listen to Paul and Anne Ehrlich: "It is essential (to) hasten as much as possible the arrival of zero population growth, followed by a prudent reduction in numbers. If the human population cannot be soon curbed by humane means, Nature will do the job for us — and she is not noted for her kindness or compassion."

It is time that *The Ecologist* devoted more space to discussion of this terrible dilemma.

Yours faithfully, Sandy Irvine 45 Woodbine Road Gosforth Newcastle Upon Tyne England

Support Jose Lutzenberger as Secretary of Environment in Brazil

Dear Sir,

On March 15, Jose Lutzenberger became Brazil's Secretary of Environment in the new Government of Fernando Collor de Mello. Lutzenberger, a winner of the Right Livelihood Foundation award, is one of the most committed and dedicated environmentalists in Brazil. His nomination as Secretary of Environment came as a complete surprise, but creates heretofore unimaginable possibilities.

Lutzenberger has said that he obtained key guarantees from President Collor de Mello in several areas: respect for the human rights of the peoples of the forest (Indians and rubber tappers); abolition of all government subsidies for unsustainable development in the Amazon; commitment to a new, ecologically and socially sound agricultural policy for Brazil. Collor further, according to Lutzenberger, has said he will not build the BR 364 road across Acre state and Peru to the Pacific. Lutzenberger has named a capable and committed individual to the presidency of IBAMA, the Environmental Institute charged with enforcing environmental legislation. He has expressed a clear intention to consult and work closely with the most activist and effective non-governmental organizations, such as the National Council of Rubber Tappers, Union of Indigenous Nations, and others.

If Lutzenberger is to make the President follow through on his commitments, and gain the political support he will need to be effective in this position, he needs our support now. Lutzenberger will be facing tremendously powerful, entrenched interests -loggers, miners, cattle ranchers and construction companies - at every step. He was certainly named in part because he is well known, and respected, internationally, and Mr. Collor hopes in this way to improve Brazil's international image. The international environmental community should express support for Lutzenberger quickly and forcefully. If Lutzenberger does not get real political support from the President, and resigns in protest in a month or six months, it will be equally as important to support him then. But strong international support for Lutzenberger now will strengthen his position while he has it.

Please send telexes and letters to: Sr. Presidente da Republica do Brasil Fernando Collor de Mello Palacio do Planalto 70.150 Brasilia D.F. Brasil Telex 613117

Yours faithfully, Bruce Rich and Stephan Schwartzman Environmental Defense Fund 1616 P Street, NW Washington DC 20036 USA

Environmental Concern or Chemophobia?

Dear Sir,

Dr Koshland's letter (Vol.19, No. 6. November/December 1989) protesting your editorial 'Scandalous Science' (Vol. 19, No. 4, July/August 1989) is misleading. Koshland ignores the clear evidence cited in your editorial of willful failure to correct blatantly false statements in the Science editorial on 'The Product Liability Crisis'. Koshland also ignores other cited evidence on systematized bias, now well recognized among activist environmental professionals, apart from environmental and occupational health groups. Such bias has also been fully reflected in other Science editorials over the past two decades. The track record establishes that Science has used its editorial columns as a bully pulpit to trivialize concerns on environmental pollution and occupational hazards which it revealingly characterizes as 'chemophobia'. Further illustrative is Koshland's stonewalling of the publication of the recent rebuttal to Ames' article supporting the chemophobic view of environmental concerns, even though this was co-signed by some 15 distinguished national authorities on public health and carcinogenesis. Only after repeated protests did Koshland eventually publish this rebuttal and then only in a drastically abbreviated version.

Rather than respond to these critical concerns raised in *The Ecologist*, Koshland attempts to trivlalize and personalize them. At July 1989 US Congressional hearings,Koshland testified that scientific fraud and fakery are extremely rare,and that 99.999 per cent of reports are accurate and truthful. Regrettably,it is now clear that the accuracy and truthfulness of *Science* has been gravely jeopardized by its editorial policies.

Yours faithfully,

Samuel S. Epstein M.D.

Professor of Occupational and Environmental Medicine School of Public Health University of Illinois College of Medicine at Chicago Box 6998 Chicago Illinois 60680 USA

GREEN PATHS

CENTRE FOR PERSONAL GROWTH AND SOCIAL RENEWAL

THE GREEN OFFICE

Exhibition and lecture programme at the London Ecology Centre, 45 Shelton Street, Covent Garden, London WC2H 9HJ. May 10th-June 2nd.

Good (and Bad) design, sick buildings etc. Details from Michael Kendall, Green Paths, 13 Croftdown Road, London NW5 1EL. Tel. 071 485 9981.

> IRISH SEA CONFERENCE 22-24 October 1990 Douglas, Isle of Man

Discussion of reports by the Irish Sea Study Group on:

- A. Nature Conservation
- B. Waste Inputs & Pollution
- C. Exploitation of Living Marine Resources
- D. Planning Development & Management.

The reports by international groups assess threats and recommend protective steps. Contact: Dr D.F. Shaw, The University, Liverpool, L69 3BX. Tel:051 794 3653.

COMPLEMENTARY MEDICINE EXHIBITIONS

The South West Exhibition of Complementary Medicine, Bristol, Saturday and Sunday 2nd and 3rd June 1990

The Northern Exhibition of Complementary Medicine, Manchester, Saturday and Sunday 20th and 21st October 1990

The Scottish Exhibition of Complementary Medicine, Glasgow, Saturday and Sunday 16th and17th March 1991

For full information contact: Geoffrey Keyte. Tel. 0253 723735.

SECOND WORLD CLIMATE CONFERENCE

Geneva, 29 October-7 November 1990. The Second World Climate Conference, sponsored by WMO, UNEP, UNESCO and ICSU, will be held in Geneva 29 October to 7 November 1990. Attendance will be by invitation only, but will include senior authors of Poster Session papers accepted. For further information on Poster Session papers, which are to be submitted by 15 May, 1990, write to: Co-ordinator SWCC, c/o World Meteorological Organization, PO Box 2300, 1211 Geneva 2 Switzerland.

THE LIVING WITHOUT CRUELTY EXHIBITION

Organized by Animal Aid. Kensington Town Hall, Hornton Road, Kensington, London. 15-17 June 1990, Admission £1.50 Friday/£2.00 Saturday-Sunday. Comprehensive coverage of the myriad issues connected with the cruelty-free ethic.

Joanna Lumley will open the exhibition at 11 am on Friday 15 June marking the start of a weekend crammed with information, ideas, films, lectures, celebrities, demonstrations and cruelty-free products. For more information contact Mark Gold or Gillian Egan on (0732) 364546.

AUDITING OUR ENVIRONMENT

Friday 1 JUNE 1990, Porter Tun Room, The Brewery, Chiswell Street, London EC1. Organized by the Association of Metropolitan Authorities and London Scientific Services. The conference will be introduced by leading politicians in the environment field and will focus on the practicalities of conducting an audit. Speakers will be drawn from a wide range of professional disciplines including planning, environmental health and ecology. Lunch is included in the fee of £110 + VAT. Exhibition space is available. Contact: Steve Bassam at the AMA: 01 (071) 222 8100. Booking information: Claire Nathan at LSS: 01 (071) 962 9884.

LEARNING WITHOUT LIMITS: THE DILEMMA OF KNOWLEDGE

The Saros Seminar, to be held on 16 June 1990 at the Royal College of Art, London 10am-5pm. Cost £22.00 incl. light refreshments. Lunch (optional) £10.50. The seminar brings together speakers from different fields to cover as broad a spectrum as possible (rather than 'educationalists' in the strict, professional sense of the word), people who have a general interest in education and can speak from the perspective of new thinking in their fields and speculate about its educational and cultural implications. The seminar is intended to be provocative and stimulating for anyone with an interest in education. Speakers include: Christine MacNulty, Managing Director, Applied Futures. Russell Stannard, Professor of Physics, Open University. Dr Mae Wan Ho, Reader in Biology, Open University. Contact: Mr P.L. Allsop, 519 Crewe Road, Wheelock Sandbach, Cheshire CW11 OQX. Tel. 0272 766174.

Classified

MISCELLANEOUS

The IWA (Inland Waterways Association) needs used postage stamps of all denominations, Green Shield, Pink, Look, Premier Gold, Co-op and Blue Chip stamps, Texaco, BP. Shell, Esso, Gulf, Fina etc petrol vouchers. Please send to WRG/IWA Stamp Bank, 114 Regent's Park Road, London NW1 8UQ. This is a permanent request and the used stamps are turned into cash or goods for sale to help restore and run Britain's Inland Waterways.

ENVIRONMENTAL INFORMATION

Consultancy offers a wide range of information services including online searching, desk research, document delivery, and bibliography compilation. Further details from: Jonathan Lee, Osprey Information Services, 18, Rosehill, Thorpe Acre, Loughborough, Leics. LE11 0SS. Tel: 0509 266650.

REQUEST FOR NEW OR USED BOOKS, fictional and non-fictional, for our library in local hospital. Especially welcome literature on geography, history and school books. Please send to: S. Paran, 13, Jalan Tenteram, 76200 Melaka, Malaysia.

THE THIRD WAY

Communism has failed. Capitalism lacks values. Is there an alternative economic system, beyond the monopoly-dominated UK, or the centralised state ownership of preglasnost Russia? Send £2.90 (incl. p&p) for ''Economic Power'' by David Simmons, payable to Third Avenue Press, 5 Russell Road, Northolt, Middlesex UB5 4QR.

STUDY HOMOEOPATHY AT HOME. Courses available at different levels, including First Year Professional. Personal Tuition. Summer School. More details from The Secretary, The Scottish College of Homoeopathy, 17 Queens Crescent, Glasgow, G4 9BL.

USSR. Ecological Project, Lake Ladoga, offers working holidays helping to restore beautiful old estate two hours from Leningrad. Details: East-West Reach 01 947 1980.

HOLIDAYS

Dordogne—2 gites and dovecote to let in quiet perigordian village, unspoilt countryside: Tel—096860167. Lucy Zawadzki, Romanno Bridge, Peebleshire EH46 7BY.

DIARY DATES

OXFORD UNIVERSITY SUMMER SCHOOL FOR ADULTS: 14 July - 4 August 1990. New week-long seminars in science for this year: Animal Communication; Chaos; Science in Art; Biological Control: Green but does it work? Contact: OUSSA, Dept. of External Studies, 1 Wellington Square, Oxford OX1 2JA; telephone 0865-270396.

BESHARA TRUST SEMINARS. Saturday 16 June 10 am to 5 pm Paul Elkins and David Fleming, REAL LIFE ECONOMICS. Cost £20. Details from The Beshara Trust, Frilford Grange, Frilford, Abingdon, Oxon OX13 5NX (Tel. 0865-391344).

6th International Standing Conference on Low Level Radiation and Health will be held at the University College of North Wales 7th and 8th July 1990 in Bangor. Send s.a.e. for details to Mrs D Evans Cae'n Cefn Trawsfynnydd Gwynedd Tel: 076-687-408.

ASSOCIATE ENVIRONMENTAL AFFAIRS OVERSEAS PROJECTS

Binnie & Partners seek an Associate based in their Redhill, Surrey office to act as a focus and coordinator for the environmental aspects of the firm's wide-ranging overseas activities. The Associate will work closely with other senior members of the Firm in maintaining a responsive strategy to the wide range of opportunities currently arising and will be expected to provide practical advice on marketing and executing work outside the UK, including Europe.

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