

The Ecologist

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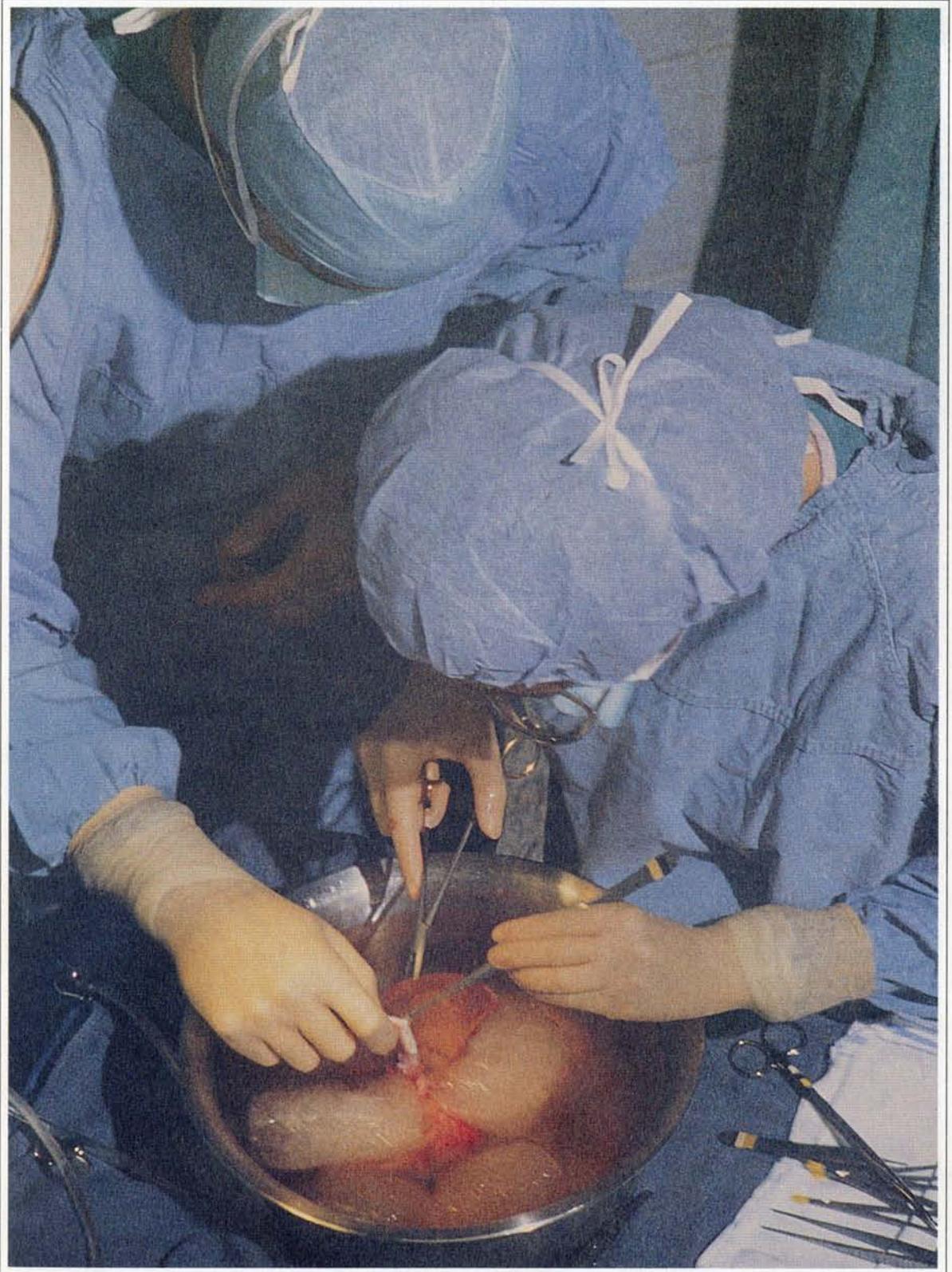
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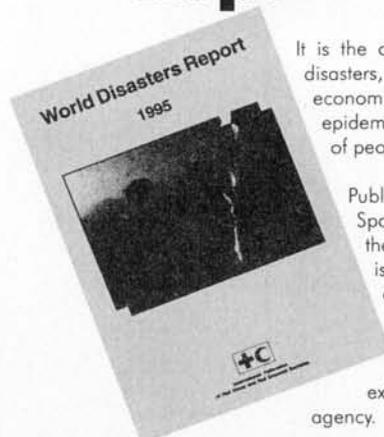
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Cover: Liver transplant operation (Hank Morgan/Science Photo Library).
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Who are the "Realists"?

We live in an age of "misplaced concreteness" in which social relations are visualized as physical objects. We equate "value" with "money"; "democracy" with "ballot boxes"; "nations" with coloured shapes on maps; "education" with "schools"; "security" with "hi-tech weaponry"; and "bureaucracy" with the buildings bureaucrats occupy.

In doing so, we render invisible many of the relationships of power that underwrite wealth and generate poverty; that ascribe value to one set of goods whilst denying it to others; that permit one class in society to appropriate the land of others or accumulate the surplus generated by the labour of others; that privilege public "debate" framed by central authorities over daily face-to-face discussions; that deny nationhood to nations and peoples *within* "nations"; and that enable bureaucracies and corporations to have an influence far beyond the buildings they occupy.

Many activists recognize that when the tendency towards "misplaced concreteness" remains unchallenged, it does violence to people and the environment, excludes other ways of being and doing, and limits possibilities for change. They insist that looking at relationships of power in all their complexity is necessary to tackling issues as diverse as environmental degradation, hunger, nuclear proliferation, corporate globalization and population control.

But to what extent are activists' own conceptions of "power" — and of "politics" — also instances of "misplaced concreteness"? How far is the political efficacy of popular dissent to the status quo being neutralized by the strategies and tactics that flow from such over-simple conceptions?

Follow the Yellow Brick Road . . .

Perhaps the dominant Western view of power is that it is a singular "thing" that a small minority ("the powerful") "have" and that others — the vast "powerless" majority — "lack". According to this view, politics consists of the comings and goings of "the powerful" — presidents, prime ministers and cabinet members, captains of industry, military chiefs, civil servants and civic leaders — and has little or nothing to do with the everyday actions and interactions of "ordinary" people. It is in the tea-rooms of the House of Commons, the boardrooms of transnational corporations and the country homes of leading dignitaries that the "real world" is to be found. It is only by entering that "real world" and getting some of this "power" which they "lack" that social movements have any real hope of achieving change.

On this view, "ordinary" people seeking to address what they feel is an injustice have a limited number of options. For those who believe that the institutional landscape of contemporary politics is essentially benign but misguided, the most urgent task is to open the eyes of "the powerful" to the problems that their policies and programmes are causing. Once aware of those problems, "the powerful" will, it is assumed, take corrective action. Campaigning thus becomes a process whereby groups lobby for the opportunity to "speak truth to power", to present the facts and to outline the remedies. The aim is not to replace the powerful nor to dismantle the current machinery of government or

commerce, but to "reprogramme" the machine — be it through introducing ethical codes of conduct for multilateral development banks, or market-led initiatives to encourage changes in shopping patterns, or new legislation to strengthen state powers against discrimination or pollution.

For those more doubtful about the willingness of "the powerful" to respond to "the truth" when they learn of it — or, rather, to respond positively — a different strategy is called for. It becomes necessary not simply to replace "their" policies by "ours", but to replace "them" by "us". One option is to work "in but against" the system, aiming to attain gradually a position of influence as, along with like-minded colleagues, one climbs up the establishment hierarchy, as some environmentalists have done in the Clinton administration and some women have done in various "population" institutions. Another is to "capture power", either through the ballot box or through force. A third is to work in active collaboration with the state and industry, thus becoming an "insider" whilst nominally preserving one's "independence". Whichever way is chosen, once "in power", the newly-"powerful" consider themselves to be in a better position to ensure that their programme for the machine is not ignored or disrupted by disgruntled elements of an old guard.

Virtual Reality

Such strategies sometimes help to achieve change — but it is rarely more than small incremental change and generally in the direction that the "powerful" were already being forced by public opinion in any case. Speaking "truth to power" may, combined with popular pressure, "convert" the occasional individual to a more radical viewpoint, but it is in the nature of bureaucracies — whether within corporations or government departments — that individual sentiments have little influence on the operations of the institution itself. For a bureaucracy to function, it is not necessary that its staff consent to what it does, simply that they follow the rules, irrespective of the content, in the work they are asked to perform. Any individuals who threaten the direction of the institution, or its *raison d'être*, quickly find themselves excluded, co-opted or "ghettoized". Ironically, the very presence of such radicals, albeit relatively "powerless" to effect change within the institution, may legitimize the progressive image an institution is seeking — for instance, that of a women-friendly "population" establishment.

The ability of dissenters to effect change *through* "the powerful" is hampered still further by fact that the "real world" of "the powerful" bears little resemblance to the real world the dissenters know. Inside the offices of the World Bank, the real world "out there" is transformed into a "virtual reality", constructed and framed to fit the needs of "the powerful" and the institutions they staff. Planners sit around discussing countries peopled by social-science constructs, where government structures are assumed to act as politically-impartial conduits for implementing development projects, and where local landscapes are mapped not in terms of forests or fields, rivers or mountains, but in terms of cubic feet of lumber, yields per hectare, and megawatts of hydro-

electricity. Activists should not be surprised that the planners' programmes, however carefully prepared, generally founder the moment they leave the drawing board. By the time they are implemented, after a fashion, they are frequently unrecognizable even to their authors. Projects aimed at increasing public participation or "decentralizing power" end up excluding "target populations" and strengthening elites and local power relationships that planners may not even have known existed; food projects aimed at increasing the availability of food to poor people end up feeding the rich; roads intended to relieve congestion increase it; and so on. Far from being part of the solution, "insider activists", at first delighted to have gained some say over World Bank planning, wind up part of the problem.

The Threat of the "Powerless"

Despite such failures, however, the "have/lack" conception of power and the strategies that flow from it still continue to exert a powerful influence over many activists. It is not difficult to see why. The power enjoyed by corporations, the military, the state, international institutions, and health and educational organizations — their ability to exert control over others in some dimensions — is an undeniable reality. Moreover, with the development of the global economy, that control is becoming increasingly concentrated in the hands of a few global actors. If these actors are "powerful", it would seem to follow that the rest of us are what these bodies are not — that is, "powerless".

Herein lies a great irony. For the "have/lack" picture of power, regarded as so "realistic" by its acolytes, is one to which corporations and governments themselves — at least those which have lasted — have never subscribed. Industry and governments show a persistent and pragmatic preoccupation with the opinions of ordinary people and how such people are reacting to their policies. While they are concerned to win over the newspaper editor, the college professor and the non-governmental organization, fear of the irate, unruly and unpredictable crowd is never far from their collective mind.

Industry and government are well aware, too, of the many different types of power they do *not* possess, although they might well wish to — the knowledge and skills that enable small farmers to look after millions of scattered agricultural plots or local woodlands without causing environmental degradation; the power of competing ideas; the power inherent in different cultural tastes and values that stand in the way of corporate plans to secure new markets or sell uniform product lines all over the world; the social networks that enable local communities to organize against a factory or a road; and the power of mobilization based on face-to-face conversations in dialects central actors find utterly impenetrable.

Industry and government never take their own power for granted; and the last thing they assume is that the rest of us are "powerless". On the contrary, they know that ordinary people are constantly acting — and have the potential to act — in many ways which they cannot control. The so-called "powers that be" are thus acutely aware of having to operate against a constant background of opposition — and of needing to *manage* that opposition.

Who are the Realists?

In the US, for example, corporations now spend billions of dollars each year on sophisticated public relations

campaigns aimed at denying the environmental movement any more political ground. Consider, for example, the "divide-and-conquer" strategy devised by the US public relations firm Mongoven, Biscoe and Duchin.¹

The strategy divides environmental and other activists into four categories: "radicals", "opportunists", "idealists" and "realists". Opportunists, attracted to campaigning because it "offers visibility, power, followers and, perhaps, even employment", are seen as being interested primarily in "personal gain". Their preoccupation with adding career triumphs to their track records, however, means that they can be dealt with by providing them "with at least the perception of a partial victory".

"Idealists" who "want a perfect world" are harder to neutralize. "Because of their intrinsic altruism and because they have nothing perceptible to be gained by holding their position, they are easily believed by both the media and the public and sometimes even politicians." The tactic employed to weaken or undermine such idealists' opposition is to convince them that their position is causing harm to others and cannot therefore be ethically justified. They can then be "educated" into a more "realistic" position.

So-called "realists", meanwhile, are the easiest category to deal with and "should always receive the highest priority in any strategy dealing with a public policy issue." Often relatively inexperienced in the workings of power outside the corridors of government, corporations or mainstream non-governmental organizations, they are particularly receptive to industry's claim to be "the only show in town". For them, the "real world" is the corporate world — hence, for example, the view expressed by the Audubon Society's Don Naish, explaining his decision to approve oil drilling by Mobil under an Audubon bird sanctuary in Michigan, that "conservations have just got to learn to work with industry". "Realists" are also easily susceptible to industry's claim that the only way of ensuring effective "damage control" is to accept its language, learn to live with "trade-offs" and abjure radical change. Not surprisingly, "realist leaders and groups are the best candidates for constructive dialogue leading to mutually satisfactory solutions". Indeed, "in most issues, it is the solution agreed upon by the realists which becomes the accepted solution."

By contrast, the category likely to present the most effective challenge to advancement of corporate interests consists of "radicals" interested "in social justice and political empowerment", who cannot be restricted to single technical issues. Worse still, the radicals' belief that "individuals and local groups should have direct power over industry" not only "makes these groups difficult to deal with" but makes it "impossible to predict with any certainty what standards will be deemed acceptable."

Given this taxonomy, corporate divide-and-conquer strategy is obvious: isolate the "radicals", cultivate and educate the "idealists" into becoming "realists", then co-opt the "realists" into agreeing with industry. Without the support of "idealists" and "realists", the "radical" and "opportunistic" positions begin to "look shallow and self-serving" to the public. The credibility of the "radicals" will be lost while "the opportunists" can be counted on to share in the final "policy resolution".

The Corporate Family Plan

Other strategies complement this approach. The public credibility of "radicals" who blame industry for environmental pollution, for example, is undermined by PR campaigns to

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disseminate educational materials to schoolchildren, television documentaries, newspaper articles and advertisements that paint corporations as key actors in "solving" pollution problems.² Meanwhile, corporate funding for "responsible" environmental groups is used to bestow increased credibility on those "realists" who argue for "co-operation" with industry. Where such funding encourages environmental groups to give industry or government representatives a place on their boards, the latter gain additional benefits through garnering information about what "the intelligent public" thinks on environmental issues, and "insider influence" to ward off potentially damaging campaigns.³

With the larger environmental organizations preoccupied with "speaking truth to power" while more or less ignoring supposedly "powerless" ordinary people, it becomes easier for the "powerful" to move in at the grassroots. Setting up or backing pro-industry groups among ordinary people to support the corporate agenda through letter writing campaigns, demonstrations and the like has thus become a major campaign strategy for industry. Companies are also mobilizing their own employees, former employees, customers and vendors — their "extended family" in PR-speak — into effective corporate support groups. As noted by *PR Watch*, an activist journal which monitors such strategies, "employee mobilization" is a particularly effective strategy in times of economic hardship and corporate downsizing:

"A smart employee who wants to keep his or her job and rise to a higher level will quickly get the message that it will pay off in the long run if they become a political operative for the company, befriending [electoral] candidates and becoming the grassroots eyes and ears for the corporation in local politics."⁴

No Backwater

Here again industry reveals a sophistication that is lacking amongst many so-called "realists" in the environmental movement. Whilst the "realists" are preoccupied with ensuring their access to would-be "centres of power", regarding local politics as a backwater and grassroots activism as something to keep their membership happy whilst the big boys in central office get on with the real job of changing policy, industry has no illusions about the critical importance of the local. It knows full well that to operate effectively at the national and international level, it *must* influence the local. Indeed, the power exercised by corporations and the state is only possible because of constant efforts to *reconfigure* patterns of control at the local level in ways friendly to central actors.

Thus, industry and the state are constantly trying to extend their networks into local areas — be it through establishing schools and hospitals, cultivating local dignitaries, buying off opponents, establishing a military presence, making alliances with potential competitors and suborning the inevitable resistance. To lose control over the local is to become an outsider, bereft of allies and insiders who can help master and manipulate local power systems to serve the corporate agenda. Indeed, if corporations are to globalize successfully, then, in the words of *The Economist*, they "need to make a virtue of being insiders not just in one area but in many. They need to act as dealers in locally-rooted insider knowledge".

Trusted Friends

In this murky world, how can environmental activists know whom to make alliances with?

As ever, it is not enough simply to seek out those actors who *claim* to be powerful or to represent "the people". Large corporations and bureaucracies, while they have great capacity for large-scale destruction, simply lack the fine-grained abilities which local people use to preserve the life of millions of unique patches of earth. Nor are such corporations and bureaucracies, as a rule, half as susceptible to pressure from those who play by their rules as they are to pressure from those "outside the game" — although both sorts of pressures are needed.

In an attempt to make lasting alliances, it is also not enough simply to look for expressed "common concerns" or an "enlightened" party platform or company charter. Today, everyone from Shell Oil to neofascist intellectuals talk the language of "neighbourhood", "family" "community power" and "local economy". Everyone from the World Bank to Georgia-Pacific affirms a commitment to "the environment" and attempts to set up community organizations to work at the local level. *Why* are these actors voicing concern for the environment or for local welfare? Within what framework? And with what intent? Are corporations and bureaucracies really seeking to support local communities' efforts to maintain (or establish) control over local land, water and air, or merely infiltrating local areas with an eye to usurping these "resources" for themselves? Are political candidates espousing "communitarianism" really committed to communities having democratic control over their own affairs, or simply looking to use the community as a state-friendly surrogate for welfare programmes? In assessing the potential for effective alliances, it is necessary to look beyond slogans to the politics of those who espouse them.

Environmentalists who lack experience of the diverse kinds of influence which operate in today's world, and who are impressed by the "have/lack" model of power, could learn a great deal about power from working more closely with those actors who, historically, have proved most effective in protecting the environment and who are most capable of becoming lasting allies — the locally-oriented activists who have successfully combined to oppose dams, toxic waste dumps, roads, and forest master plans; who are forging new community-controlled networks of support through LETS schemes and other initiatives; or who are defending and reclaiming local ways of knowing and acting.

It is a pity that such actors still often appear to many environmental bigwigs as little more than "interesting case studies" or "local helpers"; and that the image of power as something which the state and industry "have" and others "lack" has often prevented their victories from even being seen. For the efforts of such groups embody some of the most successful examples of social change and the form of organizing that the corporate world is most influenced by.

The Editors and Anita Kerski

1. "MDB's Divide-and-Conquer Strategy to Defeat Activists", *PR Watch*, Vol. 1, No.1, 1993, p.5. *PR Watch* is published by the Centre for Media and democracy, 3318 Gregory Street, Madison, WI 53711, USA.
2. Joel Bleifuss, "Covering the Earth with Green PR", *PR Watch*, Vol. 2, No.1, 1995, p.3.
3. *Ibid.*
4. Joel Bleifuss, "The God of Mammon: Christian Coalition Makes Corporate Allies", *PR Watch*, Vol.1, No.5, 1994, p.8. *See also:* Joel Bleifuss, "America's Corporate Leninists", *In These Times*, 5 September 1994, p.12.

The Body Enclosed

The Commodification of Human "Parts"

by

Andrew Kimbrell

Over the last 50 years, the human body has gradually been commodified. Body parts ranging from blood to kidneys, from sperm to eggs, are now bought and sold in a worldwide market worth billions of dollars. Biotechnology threatens to enclose the human body still further as companies move to patent human genes. Far from being at the top of a slippery slope towards such commodification, we are already halfway down it — and slipping fast.

A few years ago, the idea that a company might take out a commercial patent on a person's genes would have seemed implausible. Yet, today, patents on human cells are becoming commonplace in the United States, while other countries are being pressured by corporate lobbies to permit the legal patenting of genes. Parts of the human body, which until recently had little or no commercial value, are now regularly bought and sold as if they were a commodity just like any other. Advances in various biomedical techniques, ranging from blood transfusions through organ transplants to "new" reproductive technologies and genetic engineering, have created a boom market for everything from blood, kidneys and hip joints to sperm, eggs, embryos, fetuses, tissues, cells and genes. In response to the demand for body materials, more and more people are selling parts of themselves — their blood, organs and reproductive components (eggs and sperm) — more often than not because of their economic circumstances, while high-tech entrepreneurs are reaping billions of dollars in profit.

Blood: Gift or Commodity?

Blood was the first human body "part" to be commercialized. The history of blood transfusion goes back over 500 years, but it was not until this century that blood became a widely-sold body "product". During the two World Wars, battlefield transfusions were given to tens of thousands of soldiers. As more knowledge about blood was gained and transfusion techniques advanced, human blood became an increasingly vital factor in medical care generally. By the late 1950s, over five million pints of blood were being used in transfusions each year in the United States. Countless lives were being saved, and there was an unprecedented boom in demand for blood and hence in its value.

The resulting trade in blood did not go unchallenged. Public disquiet over the ethics of selling blood as a commodity was never far from the surface. In 1971, British economist Richard Titmuss warned:

"Short of examining . . . the institution of slavery — of men and women as market commodities — blood as a living tissue may now constitute in Western societies one of the ultimate tests of where the 'social' begins and the 'economic' ends."¹

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Titmuss urged countries to move towards wholly non-paid donor systems for blood collection. Blood, he argued, should be a gift, not a commodity. The act of donation should be a social act, not a commercial one, an affirmation of a citizen's commitment to the principle of reciprocity:

"In not asking for or expecting any payment of money . . . [blood] donors [signify] their belief in the willingness of other men to act altruistically in the future, and to combine together to make a gift freely available should they have a need for it. By expressing confidence in the behaviour of future unknown strangers, they . . . thus deny the Hobbesian thesis that [humans] are devoid of any distinctively moral sense . . . By contrast one of the functions of the atomistic private market systems is to 'free' [people] from any sense of obligation to or for other [people]."²

Titmuss's remarks were made shortly after prolonged legal wrangling in the US culminated in a court ruling that blood was a product like any other. The dispute had started when two commercial blood banks in Kansas City, Missouri, had charged a non-profit community blood bank with conspiracy "to hamper, restrict and restrain the sale and distribution of blood in interstate commerce."³

In 1955, one of these commercial banks — the Midwest Blood Bank and Plasma Center — had set itself up in a slum area, displaying a sign reading "Cash Paid for Blood". Many of the bank's paid donors were homeless men and women, or were alcoholics or drug addicts donating blood to pay for food. In 1958, the bank opened up another centre — the World Blood Bank, Inc. At about the same time, local citizens, doctors, and hospital administrators joined together to form a non-profit community blood bank to supply blood from unpaid volunteers. Almost all the hospitals, doctors and pathologists in the Kansas City area agreed to use the community bank's blood. The two commercial banks immediately went to court, charging local hospitals and doctors with conspiring to restrain their trade, the first time ever that such a legal complaint had been made in connection with blood or any other human body part.

Throughout the ensuing legal proceedings, those linked with the community blood bank maintained that blood was not a "product" like a car, or even a drug, and could not and should not be part of commerce. They insisted that the decision to use paid or non-paid blood was a moral, not an economic, one. The Federal Trade Commission (FTC), which presided over the case

disagreed, ruling that the community blood bank was guilty as charged. Blood, the FTC declared in 1966, should be considered "a 'product' or a 'commodity'" and, as such, the provision of free blood, donated by the community bank, was illegal under the Federal Trade Commission Act.⁴ The community bank subsequently obtained a higher court ruling that non-profit organizations are exempt from FTC regulations governing restraint of trade, but the FTC's view that blood should be classed as a commodity still stands today.

Since the FTC decision, the use of paid donors for whole blood used in transfusions has declined in the United States from about 80 per cent of all transfused blood in 1966 to less than one per cent in 1991, in part due to ethical concerns about buying and selling and in part to fears that blood from paid donors is a potential source of infection. Nonetheless, more than 400 US commercial blood centres still collect, buy, and market blood products, primarily in order to fractionate its plasma to produce vaccines (for example, against hepatitis and blood-borne diseases), clotting agents and other drugs. In 1991, over 13 million plasma extraction procedures were performed in the United States. Over 95 per cent of the donors were paid. Voluntary donor centres like the Red Cross provide another two million litres of plasma, collected for free from donors but often sold at market prices in the plasma products market. Worldwide, 15 million litres of plasma are obtained each year, 60 per cent of it collected in the US. The trade is worth an estimated \$2 billion a year. Some donors with rare blood types have found that their blood is worth hundreds, even thousands, of dollars per pint.

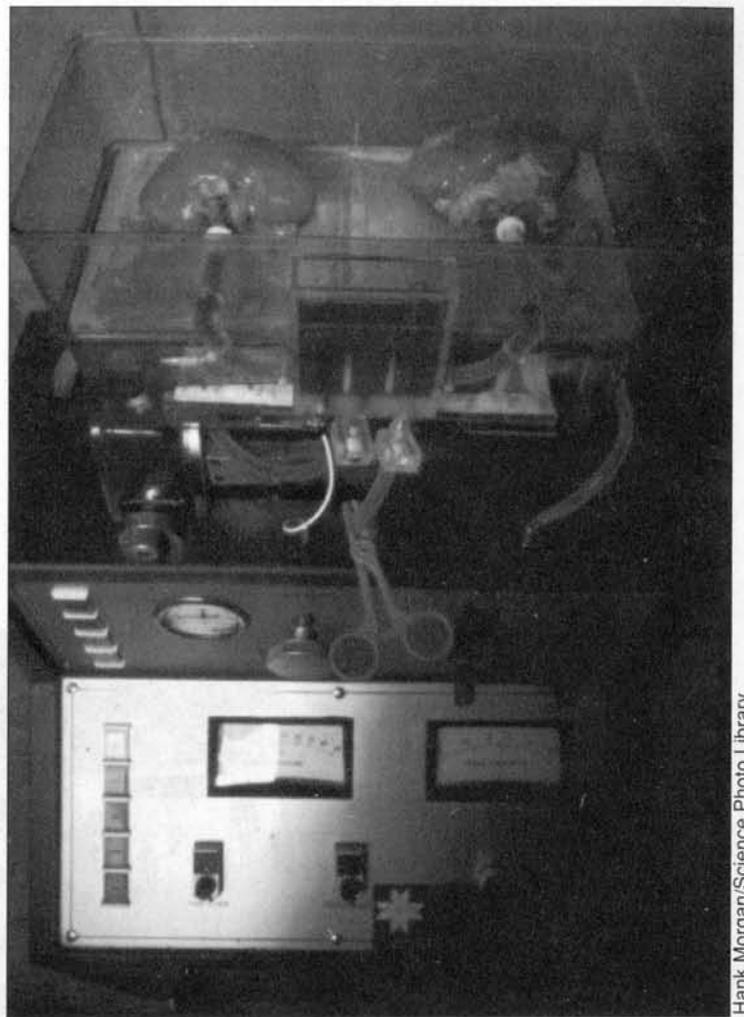
From Blood to Organs

Warnings such as those of Richard Titmuss that the sale of blood would prove the beginning of a slippery slope towards the commodification of the body have proved all too accurate. Just as transfusion techniques and advances in blood science created a lucrative market for blood and blood products, so effective new transplantation and surgical techniques have turned the body into a bewildering number of reusable parts — corneas, inner ears, jaw bones, hearts, lungs, livers, kidneys, pancreases, bones, hip joints, skin, ligaments, cartilages and bone marrow.

Demand for body organs and parts far outstrips supply. Tens of thousands of organs are now bought and sold around the world each year. Organs are for sale in India, Africa, Latin America and Eastern Europe. Donors sell the irreplaceable to buy food and shelter, to pay off debts or to get a university education. In 1991, kidneys in Egypt were selling for \$10,000 to \$15,000, or the equivalent in televisions and other electronic goods.⁵

In India — where the going rate for a kidney from a live donor is \$1,500, for a cornea, \$4,000, and for a patch of skin \$50 — a recent survey found that a majority of paid "donors" are poor labourers for whom the price paid for an organ could be more than they could save in a lifetime. A mother of two children who sold one of her kidneys after her husband lost his job stated, "There was only one thing that I could sell and still keep my self-respect: my kidney." Many in the Indian medical community are distraught at the organ market. Dr V N Colabawala, an eminent neurologist at Bombay's Jaslok Hospital, states, "We have opened the floodgates to a trade that sacrifices personal morality to expediency."⁶

An Argentinian state-run mental hospital, the Montes de Oca Mental Health Institute, near Buenos Aires, was recently



Donor kidneys being preserved prior to transplantation. The first human kidney was transplanted into another human in 1951; since then, kidney transplants have become the most common organ transplant around the world.

reported by the *British Medical Journal* to be removing and selling the blood, corneas, and other organs of its patients. After allegedly killing patients for their organs, the Institute would report to relatives that they had escaped or died. From 1976 to 1991, the Institute reported over 1,400 "escapes" and nearly as many deaths.⁷

In the United States, the sale of organs or organ parts in interstate commerce is banned under the 1984 National Organ Transplant Act,⁸ but with a new name being added to the waiting list for donated organs every 30 minutes, there is a shortage of organs. Advocates of renewed sales argue that paying for organs would stimulate supply by providing incentives that altruism alone cannot. To deny organ sales, they maintain, is to deny individuals the right to decide what they wish to do with their own bodies — and to prevent the poor from using a legitimate means of improving their condition.

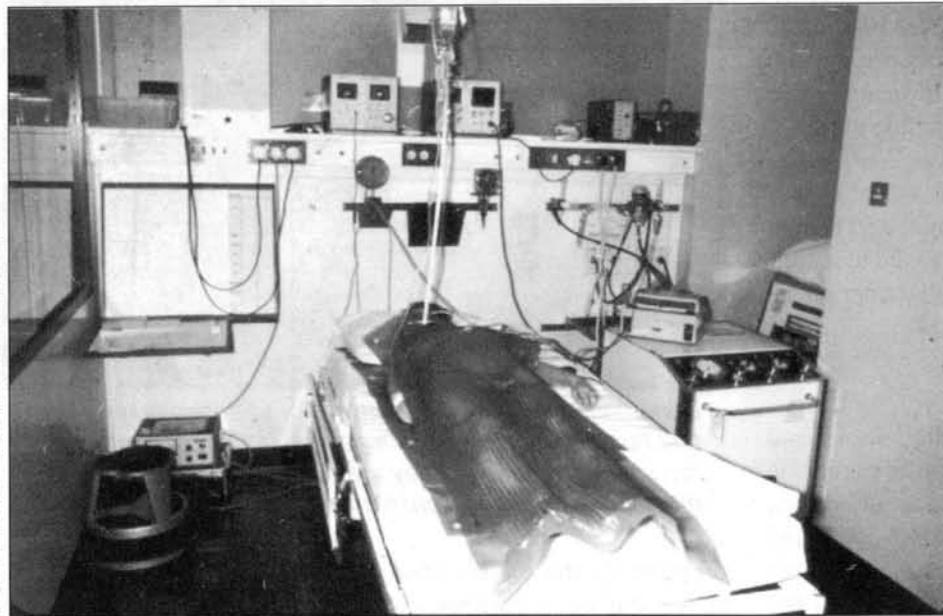
Whilst a market in organs would undoubtedly increase supply, the assumption that organ sales are "freely" entered into by poorer people is extremely dubious. As Rita L Marker, director of the International Anti-Euthanasia Task Force, writes, appeals to the "market" and "individual choice" mask an inherently exploitative trade:

"Call it what we may, payment for organs is a bounty placed on the bodies of those whose families are least able to withstand financial pressure . . . It will be the poor, the desperate and the disadvantaged whose loved ones will be worth more dead than alive."⁹

Harvesting the "Dead"

For centuries, death has been understood as being that moment when breathing ceases and the heart stops beating. The demand for organs, however, led to pressures to change the definition of death because, to obtain viable organs for transplant, physicians need to remove them from a body in which circulation and respiration are still going on. Responding to such pressures, a 1968 Harvard Medical School committee recommended that death be defined as a permanent cessation of brain activity rather than of heart and lung function. This would enable surgeons to keep organs "fresh" in legally dead people, using artificial life support systems, until they could be removed for transplant.

By 1981, the American Medical Association, the American Bar Association, and a White House commission had all endorsed the "whole brain death" concept of death, and within a short time, most states had passed legislation accordingly.



A brain-dead person on a life-support system.

As artificial circulation, respiration and other technologies improve, many think that "dead" patients could be kept functioning for months, even years. These "neomorts" or "living cadavers" could then be used as whole-body "storage systems" for scarce organs and blood supply, and as research "tools" to test drugs and experimental medical procedures.

An extension of the definition of death still further to those who have lost only "higher" brain function (but not whole brain function) could provide tens of thousands more suitable organ donors. Many of those who no longer have higher brain function could be highly-dependable and economic long-term sources for organs, since they breathe on their own without requiring artificial respiration.

Fetuses for Sale

Organ transplants have not only changed the definition of death; they are also changing the definition of life. The unborn are now joining the born as sources for organs and body tissues. Indeed, US economist Emmanuel Thorne has predicted that the fetal transplant industry could soon dwarf the present organ transplant industry.¹⁰

In the US, the first fetal transplant took place in November

1988 when doctors implanted tissue from the brains of fetuses into the brain of a 52-year old man, Don Nelson. Nelson was suffering from Parkinson's disease, a condition caused by the non-functioning of certain brain cells which produce dopamine, a chemical necessary to nerve functioning. The aim of the transplant was for the fetal tissues to begin manufacturing dopamine in Nelson's brain. Fetal tissue transplants have also been tried as a therapy for diabetes.¹¹

Despite controversy over their effectiveness,¹² fetal transplant operations are expected to increase over the next few years. Prospective recipients in the US of fetal transplants could include one million people with Parkinson's disease, three million suffering from Alzheimer's disease, 25,000 with Huntington's disease, and six million diabetics.

Human fetal transplantation into animals is also on the increase. In October 1990, immunologist Dr J Michael McCune successfully transplanted human fetal organ subparts into laboratory mice. In these experiments, tiny human organ structures,

including lungs, pancreases and intestines, were implanted into mice which had been born without immune systems. Within a few days, the mouse's blood vessels invaded the miniature organ parts and the fetal organs began to grow, eventually engendering human immune cells. Once the immune system was in place, these mice, now called "humanized mice," were used to screen a variety of antiviral drugs for their effectiveness in fighting diseases. Several pharmaceutical companies have contracted to have proposed anti-HIV drugs tested on these mice.¹³

In contrast with other human organs, fetuses are in abundant "supply" — over 1.6 million abortions take place each year in the US and over 30 million worldwide. To "harvest" these aborted fetuses on a significant scale for use in transplants or in research, however, requires substantial alterations in the method, timing and manner of abortions,

because fetal tissue is effective only if it is reasonably developed, intact and alive. "We need tissue that is fairly fresh," notes James S Bardley, Jr, director of the International Institute for the Advancement of Medicine (IIAM), a group that collects aborted fetuses. "We have to process the tissue within minutes of the time of death."¹⁴ To obtain fetal parts ranging from whole hearts to brain slivers and organ fragments, IIAM advertises for doctors who perform three to six month abortions using certain suction methods, in particular, the dilation and evacuation (D&E) technique in which labour is induced and the fetus essentially pulled out of the anaesthetised woman. With other methods of second-trimester abortion, a lethal injection is given to the fetus prior to inducing labour. Because the fetus is often alive during D&E abortions, Bardley admits that "some doctors are squeamish about D&Es".¹⁵ Up to 12 IIAM "anatomy specialists" collect approximately 700 specimens per month from 450 second-trimester abortions. Each year, tissue brokers like IIAM distribute approximately 15,000 specimens to researchers and doctors.

IIAM pays a "service fee" to 18 abortion clinics, mostly those that perform second-trimester abortions, to allow its specialists to search for and take fetal parts. In turn, IIAM charges a fee for the fetal parts it distributes to researchers. Buyers of IIAM's tissues pay "handling fees" of between \$50 to \$150, depending

on the fetal tissue specimen. For its customers, IIAM attempts to keep charts on the fetus's medical history. However, testing the fetal parts for infectious diseases such as HIV and syphilis costs extra. According to Bardley, IIAM fetal tissue sales bring in close to \$1 million annually.¹⁶ Many women who have an abortion are unaware that their fetuses may be used for research or transplants. Even if they were, it is likely that they would be under psychological pressure to agree to fetal tissue use so that some "good" could come of their abortion.

The selling of fetuses not only places women as manufacturers of a new commodity in the human body shop, with clinics and hospitals as traders and utilizers of the product, and companies as the profiteers, but also opens up the possibility of individuals seeking to arrange their own source of fetal organs by conceiving in order to abort.¹⁷ Many experts feel that the current disapproval of "growing fetuses" for medical uses will be short-lived. As Emmanuel Thorne notes, "The potential uses of fetal tissue make the temptation to conceive with intent to abort almost inevitable."¹⁸

The Baby Factory: Sperm Vendors

Other markets for human reproductive "material", particularly for the treatment of infertility (see Box, this page) and for gene research, have also opened up in recent years.

Sperm is the leading reproductive commodity currently on sale. Today, over 11,000 doctors provide artificial insemination (AI) to about 172,000 women in the US each year. Live births are achieved in about 38 per cent of cases, resulting in an estimated 65,000 AI babies born each year, about 30,000 of them from donor sperm. Almost half the women are inseminated with sperm from anonymous donors, usually medical students.¹⁹ Paid sperm donors average \$50 per donation and may give as often as two to three times a week for several years. Some students make hundreds of such donations, their sperm samples fetching as much as \$200 on the open market.

The paid donors are encouraged to view the inseminations as "business transactions" and to see themselves as "vendors", offering a product for which there is a growing demand. The anonymity promised to them by the sperm-buying clinic or doctor helps sustain the sense of detachment and lack of accountability. However, later in life, many donors no longer see the sperm donation as a commercial transaction, but rather as actual fathering. As researchers Annette Baran and Reuben Pannor report:

"The parent-child relationship [can awaken] in ex-donors a sense of regret, concern, and fear for those children whom they fathered without any recognition of their fatherhood."²⁰

Many offspring of donor insemination are angry, frustrated by the wall of anonymity around their genetic fathers, and disturbed that their births were part of a business transaction. They may have feelings of being rejected and sold by their biological fathers. "They accepted money to create you," says one donor-insemination offspring. "If your own flesh and blood sold you, it's a real hard place to come from."²¹

Eggs for Sale

With the development of techniques for fertilizing human eggs outside the womb — *in vitro* fertilization — eggs have followed sperm into the marketplace. Over 65 medical centres in the US

Fertility for Sale

Female and male infertility can be physical and emotional problems for millions of people, but popular descriptions of infertility tend to be exaggerated and misleading. The media frequently describes infertility as an "epidemic" affecting 10 million infertile couples, or a "tragic scourge" on one in six US couples. In fact, infertility affects 2.3 million US couples — slightly less than one in 12.

Although infertility did not increase during the 1980s, infertility treatment did. And although infertility is just as often a male as a female "problem", it is women who are targeted by what are called the "new reproductive technologies". Up to one million US couples now seek infertility treatment each year in what has become a multibillion dollar business. The industry which started with *in vitro* fertilization (IVF) now features a veritable alphabet soup of baby-making techniques: GIFT (gamete intrafallopian transfer), ZIFT (zygote intrafallopian transfer), TET (tubal embryo transfer), PZD (partial zona dissection), MESA (microsurgical epididymal sperm aspiration), DI (donor insemination), egg donation by donor, and genetic and nongenetic surrogate motherhood.

The media and medical hype surrounding these reproductive technologies hides a dismal failure rate: only about 10 to 14 per cent of couples who enrol in IVF programmes in the United States actually take home a baby. Regardless of success or failure, infertility treatment can take its toll on women undergoing the highly invasive infertility procedures. Multiple doses of powerful hormones, numerous artificial inseminations, embryo implantations, fallopian transfers of gametes and zygotes, and a variety of other procedures and surgeries are routine. One woman who had undergone numerous fertility treatments stated, "This is what hell must be like."

Researchers routinely implant multiple embryos so that some will "catch". As a result, 25 per cent of embryo births involve twins or triplets. But because too many embryos threaten the health of one another and of the mother, a technology called "selective reduction of pregnancy" has been developed, whereby a lethal chemical is injected into one or more of the developing embryos to improve the chances of the survivors.

Women's health advocates are increasingly concerned about the impact of these procedures on women. "We are angered that these technologies are being represented as safe, effective and in a woman's best interest," says author and activist Dr Janice G. Raymond. "They are none of these things . . . IVF clinics exist because they are immensely profitable. They aren't proliferating out of altruistic impulses for so-called desperate infertile women."

Other critics of the new baby business note the irony that while billions of dollars are spent in the often unsuccessful attempt to create babies for those who can afford the high price of reprotch, the United States currently ranks 22nd in the world in infant mortality, losing thousands of babies each year to poverty, drugs and lack of adequate health care. Certain US inner city areas have a greater infant mortality rate than some of the poorest nations of the developing world.

The Baby Brokers

As of April 1992, there were some 29 brokers in the baby-selling business in the United States; five were lawyers, two were social workers, two were housewives, one a supermarket operator and several without known expertise or employment. A few of the brokers operated out of urban offices, others out of their homes, and at least one sold a "surrogate mother kit" as a travelling salesperson.

Baby vendors are not licensed, and they are not subject to any pertinent state or federal rules. Scandal has been associated with virtually every surrogate broker's business. Noel Keane, often termed the "big daddy" of surrogacy, has been responsible for over 400 surrogate births and has been the target of numerous lawsuits. He was the broker in at least 10 intensely contested cases and has been sued for negligence and a variety of other misdeeds by a number of surrogate mothers. He has also been sued for malpractice by one client couple, after they discovered that they had spent \$50,000 for a child who was not genetically theirs. Keane has the record for the most number of children abandoned as a result of his business. According to the *Detroit News*, at least five children born in Michigan through Keane contracts have ended up in state-funded foster care.

Mere Products

In a typical Keane contract signed in July 1987, surrogate Patty Nowakowski and her husband Aaron were required "not to form or attempt to form a parent-child relationship with any child or children Patricia Nowakowski, Surrogate, may conceive, carry to term and give birth to."

In the fourth month of Patty's contract pregnancy, ultrasound revealed that she was carrying twins. The client couple seemed delighted, but then, two weeks before the expected date of birth, visited Patty's home and stated that they would accept a girl only, not a boy, as they already had three boys and did not want another. They categorically stated that they refused to accept any responsibility for a boy — or boys.

Patty and Aaron had three young children of their own and could not easily manage any more. When Patty called Keane for help, he informed her that her only option was

to let the couple have the girl, if one of the twins was a girl, and then have the boy (or boys) put up for adoption.

In April 1988, Patty gave birth to a girl and a boy. A week later, the client couple took the girl and the boy was left with an adoption agency to be placed in a foster home. However, the Nowakowskis, despite their three children and financial worries, decided to take back the boy, and within a few weeks, took legal action against the client couple to gain custody of the girl. Facing a difficult and embarrassing court case, the couple relinquished the child. Six weeks after their birth, the twins were reunited and, in August 1988, officially adopted by the Nowakowskis.

Market Redistribution

A former French health minister declared the practice of commercial surrogacy "slavery over women", and Germany forbade Keane from operating an office within its borders. Australia, Israel, Norway, Spain Switzerland and the United Kingdom have also banned commercial surrogacy. Public policy organizations in Austria, Canada, Italy, The Netherlands, New Zealand and Sweden, as well as prestigious international organizations such as the Council of Europe and the World Medical Association, have also rejected it.

In the United States, however, it has proven difficult to ban contract childbearing. Many US legal scholars and economists defend surrogacy on the grounds that if a market system is to survive, contracts must be sacrosanct. They also argue that an open market in babies would enhance public good by distributing babies more equally from those who have them (often the poor) to those who do not and can afford to buy them. Free market advocate and now appellate court judge Richard Posner has argued that the sale of children actually increases their welfare: "The willingness to pay money for a baby would seem on the whole a reassuring factor from the standpoint of child welfare. Few people buy a car or a television set in order to smash it. In general, the more costly a purchase, the more care the purchaser will lavish on it."

offer donor egg programmes for infertile women. The donor eggs are fertilized in the laboratory using sperm from the woman's partner or another chosen party and then implanted in the infertile woman's womb for gestation. In 1990, clinics reported almost 550 egg transfers at a cost of \$12,000 per transfer.²²

Egg donors, however, are not easy to come by, not least because, unlike sperm, eggs are difficult to collect, and collection is hazardous to the donor. A woman is injected with extra hormones, which can have side effects such as ovarian cysts and ovarian cancer, to overstimulate the ovaries to release large numbers of eggs. The woman must undergo frequent blood tests and ultrasound scans to determine when the eggs are ready to be "harvested". "Since ovaries are internal, the eggs have to be sucked out with a needle," notes Dr Mark Sauer of the University of Southern California, who runs one of the largest US egg donor programmes. "There is the risk of haemorrhage and infection, and therefore a risk of damage and potential infertility."²³

As the intrusive nature of the procedures involved in egg stimulation and retrieval makes donors scarce, there is a

growing trend to pay women to entice them to donate. Clinics advertise for egg donors in magazines and newspapers across the country. One advertisement, from IVF New Jersey, has the heading "Earn \$2,000" and urges readers to "Help infertile couples realize their dreams"²⁴ (although in fact "spare" eggs and subsequent embryos are often used instead for research). Currently, 10 clinics in the United States supply women clients with lists of healthy young women who have agreed to provide eggs for about \$2,000 per removal.

Wombs for Hire

Practices which allow the rich to buy the genetic material of the poor and which coerce the paid donor into submitting to physical risk are compounded by the practice of paying women to gestate babies for clients from either their own egg, a donated egg or the egg of the "client".

Such hiring of surrogate wombs is fast becoming a profitable and highly-visible business, with baby brokers arranging the

birth of babies through commercial contracts and charging customers between \$30,000 and \$45,000 per child (see Box, p.138).²⁵ Over 4,000 such births were arranged up to 1992, bringing in close to \$40 million.²⁶ Most "clients" have chosen surrogacy as a last resort after years of infertility and treatment, but the brokers themselves report that others are couples who, for reasons of health, employment pressure or inconvenience, do not wish to bear a child.

While those who are willing to pay others to bear their babies are generally well-off, surrogate mothers are generally economically disenfranchised, often unaware of their legal rights and unable to afford a lawyer. Dr Howard Adelman of Mothering Ltd notes that women in financial need are the "safest" surrogate applicants since their need for money makes them less likely to change their mind after signing a surrogate arrangement.²⁷

Once a woman signs a contract to produce a baby for a "customer", she is artificially inseminated as many times as is necessary to induce pregnancy (if she is also providing her own egg). During the next 40 weeks, she is routinely required to submit to massive doses of fertility drugs, hormone injections, amniocentesis, and an array of genetic probes and tests at the discretion of the client. The agreements often stipulate that the woman agree to abort the fetus if and when the client desires to terminate the "service" or if the tests are unfavourable. Contracts also have written provisions to make the pregnant woman liable for all "risks" connected with conception, pregnancy and childbirth, including all pregnancy-induced diseases, any post-natum complications, and even death.²⁸

In return, women who have signed surrogacy agreements are generally paid \$10,000. Most often, this payment is made only after the "product" — the baby — is delivered to the customer. Under certain agreements, the contract mother receives only \$1,000 if the baby is stillborn.²⁹

Inevitably, surrogacy and the selling of eggs and sperm has

raised questions over the social definitions of "fatherhood" and "motherhood" — is the father the man who donates the sperm or the one who signs the contract or the one who raises the child? Is the mother the woman who donates the egg or the one who bears the child or the one who signs the contract or the one who raises the child? Some women have signed a contract to bear a child for a couple, either from a donated egg or their own egg, but after the birth have not wanted to give the child away and have therefore gone to the courts to obtain custody of the baby. Some courts have given custody to the woman who gave birth, but in many cases, custody has been granted to the contracting couple. A mother and father have in effect been redefined as the woman and man who set up the contract.

In one legal dispute over a child born to a surrogate mother from the client's egg, the judge declared that the age-old definition of mother as the woman who gives birth to a child had been superseded by technology; the birth mother was no longer a mother but a new category of woman invented by the judge, "the gestational carrier of the child, a host in a sense."³⁰ A "surrogate" becomes a "maternal environment" or "fetal environment" for the purposes of bearing a couple's child.

Perfect Babies

The enclosure of reproduction continues with genetic screening. Couples can not only employ others to have "their" children, but, using genetic screening technologies, can also assess the "product" before it is born — "imperfect" samples being weeded out through abortion.

The use of amniocentesis and chorionic villus sampling (CVS) for the purpose of sex selection is becoming increasingly common. It sets a dangerous precedent for attempts to abort fetuses who have been predicted to develop "undesirable" characteristics such as low IQ, short stature or poor eyesight.

Patents on Life

Legal battles over human tissue ownership started almost as soon as researchers began mastering cell line technology. In a landmark case, Alaskan businessman John Moore sued the University of California in 1984, claiming that he was entitled to a share in the \$3 billion of potential profits that the university and certain corporations stood to gain from his cell line — developed from cancerous tissues removed from his spleen when he was undergoing treatment for an extremely rare form of cancer, hairy cell leukaemia — which had been patented by the Regents of the university in 1981. The cell line consisted of T lymphocytes (white blood cells) and was used to produce valuable antibacterial and cancer-fighting pharmaceuticals. Moore's surgeon, Dr. David W. Golde, and Shirley W. Quan, a researcher at the University of California, were listed as the cell line's inventors and contracts had been signed with a number of companies to collaborate on commercial exploitation of Moore's cell line.

In 1986, the court rejected Moore's position that one could have a property claim on one's own discarded tissues. Moore appealed and, in July 1988, won a ruling that he had a property right in his own bodily tissues and that he was entitled to a part-ownership in the patented cell line that bore his name.

This court's decision sent shock waves through the

biotechnology industry, raising the spectre of a flood of claims for compensation from all those whose cells, tissues or genes were being used for living patentable products. The court also held that Moore's consent to surgery did not imply consent for the commercial exploitation of his tissues and rejected the university's position that ethically no organ or tissue donor should have a property right in body parts, but that they (the university) could.

The university in turn appealed the decision, and in July 1990, the California Supreme Court handed down an opinion which was a compromise between the two prior court decisions. It held that human cells and tissue were not property like any other. Human tissues could not be sold or bartered by the person giving them up. Moore thus had no "property right" in the tissues of his body. Moore was not, however, totally forsaken by the court, which also held that Dr Golde had violated his fiduciary duty to Moore by not fully informing him of the financial potential of his tissues.

The court's decision caused the biotech industry to heave a collective sigh of relief. Their worst nightmare — thousands of tissue donors becoming part-owners in patented cell lines and other biotechnology patents and products — had been avoided.

Results from a recent poll of New England couples demonstrate the dangers: one per cent would abort a fetus on the basis of sex, six per cent would abort a child likely to get Alzheimer's disease in old age, and 11 per cent would abort a child "predisposed" to obesity.³¹

Under pressure from the genetic screening and medical industries, couples in the future may increasingly "choose" *in vitro* fertilization of their own eggs and sperm so that doctors could conduct "embryo biopsies" to determine which of the embryos had the most desirable genetic traits. Doctors would then reimplant the desired embryo or embryos in the woman or a paid surrogate. Prospective parents could pick the embryo which had the characteristics that matched their desires and discard the others.

The implications of such prenatal genetic screening have not been lost on doctors. "I see people occasionally in my clinic who have a sort of new car mentality. [The baby's] got to be perfect and if it isn't you take it back to the lot and get a new one," states geneticist Dr Francis Collins.³² "We do have in our society a premium baby mentality," says Mary Mahowald, a professor in the Department of Obstetrics and Gynaecology at the University of Chicago. She continues:

"It is eugenics. We don't give it that name, but we foster the concept nevertheless. It has intensified over the last decade because of the two child family, the availability of abortion and the techniques we have for pre-natal, even pre-pregnancy diagnosis. All those together contribute to the notion that people not only ought to be able to determine when to have children, and how many to have, but also just what kind of children to have."³³

Patenting Life

Biotechnology threatens to exacerbate these eugenicist pressures still further. Although early attempts at human genetic engineering have focused on identifying "genetically-inherited diseases", scientists are now researching the means to alter human germlines, that is, the genes deemed responsible for passing on hereditary traits. They argue that the time has come, through biotechnology, for science to be a coauthor in the evolution of the human body. The manipulation and marketing of human genes may represent the final denouement of the human body shop controversy as large biotechnology corporations move to establish a monopoly on the ownership and use of the 100,000 and more genes which comprise our human genetic makeup.

Property rights have been established by some companies over certain human cells, often without the knowledge of the people from whom they were taken (*see* Box, p. 139). During the last decade, patients have routinely signed consent forms allowing for disposal of cancerous or other "bad" tissue after surgery, often assuming that the tissue had no monetary value and that its only use was for non-profit research. Biotechnology, however, has made "bad" tissue a profitable body part business. Using new laboratory techniques, formerly "worthless" human tissue garnered through surgery can be manipulated to create human cell lines — cells cultivated artificially in the laboratory — which can then be used to create human biochemicals worth billions of dollars.

Through such patents, biotechnology companies are establishing control over whole features of the human body. In October 1991, for example, the US Patent Office granted

Systemix Inc. of Palo Alto, California, monopoly rights over some human bone marrow stem cells, the progenitors of *all* types of cells in the blood. The Systemix patent not only covers the process by which Systemix isolated human stem cells, but also covers the stem cells themselves. "It really is outlandish to believe that you can patent a stem cell," asserts Peter Quesenberry of the Leukaemia Society of America. "Where do you draw the line? Can you patent a hand?"³⁴

If the patent survives inevitable legal challenges, every individual or institution that wishes to use any stem cells for a commercially viable cure for diseases or disorders will have to come to a licensing agreement with Systemix. As ethicist Thomas Murray puts it, "They've invaded the commons of the body and claimed a piece of it for themselves."³⁵

Behind the Human Body Shop

Scientists, corporations and government agencies are continuing to refine the legal and technical means to patent life-forms, genes and cells. How has the commercialization of the body and its parts become acceptable? The transformation is not simply an unfortunate by-product of technology, nor merely the result of irresponsible science, poor regulation, greed, inaction or governmental neglect. The human body shop has its roots deep in Western cultural, religious and social history, in particular, the two dogmas of mechanism and the free market.

Mechanism is the basis for much of modern science. It has ingrained in our society a reductionist view of human bodies and other life-forms, which allows us to view them as biological technology available for sale. The ideology of the market, meanwhile, has become the basic ordering principle of capitalist social life. It provides the primary rationale and ethical foundation for the selling of human body materials.

But the further engineering and marketing of the human body and its parts is not inevitable. Many concerned citizens and groups are already working to generate much wider public awareness and debate over the commodification of the body by pressuring governments, international agencies, parliamentarians, doctors and scientists to help guarantee:

- no further expansion of the legal definition of death, or use of cadavers or neomorts as storage receptacles of organs.
- a ban on the use of induced-abortion fetuses for transplantation and research until the profound ethical, legal and commercial problems surrounding this practice are fully discussed.
- no eugenic use of "superior" sperm or eggs.
- limits on the use of genetic screening of the unborn (amniocentesis, CVS or preimplantation genetic screening of embryos).
- no genetic screening or monitoring of workers, and no discrimination against individuals in questions of employment or insurance or health coverage based on their genetic readout.
- no use of genetically engineered drugs to alter or treat human traits that are the object of discrimination.
- no use of genetic engineering of humans for cosmetic or enhancement purposes.
- a ban on the germline alteration and cloning of animals, including the engineering of human genes into animals, until there has been a full public debate on the issue and the ethical and environmental consequences of the genetic engineering of animals are better understood.

- a ban on germline genetic therapy for the foreseeable future.
- a ban on the cloning of human beings.
- a ban on the sale of organs for transplantation and research.
- a ban on the sale of fetal parts, sperm, eggs and embryos.
- a ban on surrogate motherhood, with criminal penalties for surrogate brokers.
- an international ban on the patenting of all life-forms, including genetically engineered animals and human cells, genes, embryos organs and other body parts.

This article is an edited extract of *The Human Body Shop: The Engineering and Marketing of Life* by Andrew Kimbrell, published by Harper-Collins. Write to *The Ecologist* for a list of groups working on these issues.



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Pulp, Paper and Power

How an Industry Reshapes its Social Environment

by

Anita Kerski

The dispossession, deforestation and pollution caused by the pulp and paper industry is tied to a dynamic of ever-increasing scale, concentration and capital intensiveness which has characterized the industry since the Industrial Revolution. Crucial to this dynamic are attempts by the industry and its allies to refashion the political and physical infrastructure through which they work, capturing subsidies, managing demand, centralizing power, and evading, digesting and regulating resistance. In such a context, the claim that the industry helps society meet its pre-existing needs "more efficiently" makes little sense.

In recent years, the expansion of the pulp and paper industry has provoked increasing opposition throughout the world. In Europe, South-East Asia, and South and North America, campaigns are gaining momentum to reduce dioxins and other toxic compounds produced by the use of chlorine in the paper-making process. In Canada, 932 people arrested for protesting against logging for pulpwood near Vancouver Island's Clayoquot Sound went before the courts in the summer of 1993 in the largest mass trial in Canadian history.¹ In Indonesia, environmentalists and local people are alarmed at the planned pulping of over 6,000 square kilometres of native hardwood stands on Sumatra and Kalimantan by the turn of the century,² while the expansion of monoculture pulpwood plantations is rousing opposition from Chile, Brazil and the Dominican Republic to Portugal, Finland, India and Australia.

The response of apologists for the pulp and paper industry to this outcry relies partly on several assumptions about the industrial economy, namely that:

- Companies do not alter society's goals and needs but leave them untouched; they merely provide wealth, goods and jobs which help society do better what it is doing already.
- It is the drive to do so efficiently and competitively which causes such firms to increase the size of paper machines and to seek cheaper production sites around the world.
- Any social and environmental disruption which results from this expansion requires at most some adjustments to the market apparatus or state regulatory systems, not a rethink of the industry's scale, structure or political relationships with the rest of society.

Such assumptions have long been under attack by affected people and critical social scientists. These critics point out that, far from passively responding to consumer demand, public consensus and government regulation, modern corporations

have a deep interest in forming and managing them, and that, rather than creating wealth for all, such firms typically survive only through hidden handouts from public coffers.³ In these circumstances, the pulp and paper industry's defence that, through seeking profits, it is merely increasing society's "efficiency" in meeting the pre-existing needs of its members becomes highly questionable.⁴

The industry's current drive towards larger scale and global expansion cannot be explained solely by "economics". But neither is it being driven by a political conspiracy of unseen masterminds in transnational corporation boardrooms acting with the careless ease of omnipotence. Social structures sensitive to the needs of pulp and paper elites are built, expanded and improved upon only through the political efforts of a multitude of agents with different interests and motivations, working together in an *ad hoc* and sometimes uncoordinated fashion against an ever-varying background of resistance. Close attention to this dynamic is likely to be crucial to the success of environmentalists' efforts to reduce the damage done by the industry.

Machine Politics

The evolution of pulp and paper technology has always been intertwined not merely with profit but with the attempt of small elites to rearrange structures of power in their favour. For example, although a boom in publishing in the seventeenth and eighteenth centuries had contributed to an increased demand for paper which the prevailing artisanal, rag-based technology could not easily meet, Nicholas-Louis Robert's invention of the forerunner of the modern paper-making machine near Paris in the late 1790s was, by his own account, neither a profit-seeking response to demand for more paper nor an attempt to replace scarce rags with other raw material. Rather, it was an attempt to undercut the power restive paper artisans held at a time of revolution by centralizing paper-making technique in the hands of factory owners.⁵ It was not until the late nineteenth-century development of commercial techniques for pulping wood, a

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material which could be harvested at any time and easily stored and shipped in great volume, that the full potential of the new machine began to be realized.

The switch to wood as a raw material reinforced papermakers' reliance on large, highly-mechanized mills — for one thing, the chipping equipment and stone grinders used to process logs produced too much pulp for small paper mills to absorb.⁶ Yet the more that the pulp and paper industry invested in huge, wood-adapted pulp and paper machines, integrated with the timber industry and decoupled from any other source of raw materials, the less inclined the trade became to consider any other approach.

Early twentieth-century paper machines tended to be both standardized and profitable. But competition among newspaper magnates in North America and Britain to build ever-bigger paper machines soon escalated. The huge machines became less and less cost-effective: not only were many of them "one-offs", but their huge widths and speeds — by 1937, machines could produce a kilometre-long sheet of paper 7.7 metres wide in little more than two minutes — also required sophisticated and expensive controls for efficient operation. As British paper expert A. W. Western remarks:

"no logical reasons can be traced for increasing size to this extent. Labour costs have often been quoted, but machine labour was then, and still is, a relatively small proportion of overall costs. More likely reasons . . . were pride and prestige."⁷

Between 1930 and 1975, as the technological race continued, the cost per annual tonne of a newsprint machine increased at least 40-fold while the price of newsprint itself increased less than 20-fold. Yet the major machine manufacturers' investment in large machine tools had by now made it difficult for them to produce for anyone but the largest paper investors. As Western concludes, building new paper machines:

"became a luxury which could be afforded only by multinational giants or the governments of developing countries, advised by consultants that only scale to this degree could be economic! For the consultants, it *was* economic: they were now essential for large mill design and coordination."⁸

Nicholas-Louis Robert's nearly 200-year-old dream of concentrating paper-making power in the hands of plant owners, in short, had been realized with a vengeance. Access to the dominant stream of papermaking knowledge was now restricted not just to capital, but to *big* capital. For many capital-short Southern societies with interests in meeting their own paper needs efficiently with indigenous materials and technology, the implications were particularly bleak.



Papermaking in Europe in the seventeenth century.

Reorganizing Landscapes

Today, 90 per cent of paper pulp is made of wood, either by grinding it up or chipping and boiling it in strong chemicals. Large quantities of fresh water and energy are required for the process, which consumes annually the rough equivalent of the timber that would cover 20,000 square kilometres of wooded land, an area half the size of Switzerland. Paper manufacture is estimated to account for nearly 13 per cent of total wood use, and represents one per cent of the world's total economic output.⁹

Most of the pulped wood which is used to manufacture newsprint, packaging board and writing paper flows from a small number of sprawling plants, shining with expensive, computer-assisted machinery and costing up to US\$1 billion apiece. In the United States, whose world-leading output of 58 million

tonnes of pulp per year is supplied by a mere 203 mills, the pulp and paper industry is more capital-intensive than any other.¹⁰ New mills in Indonesia, Brazil and Canada are no less capital-intensive, some of them requiring capital investments of US\$750,000 or more for each employee.¹¹

The giant pulping machines at such plants have to be run nearly 24 hours a day if the massive debts incurred in their construction are to be paid off on schedule. This reinforces the mills' need for secure access to huge supplies of nearby water and wood. Hence the mills must not only be sited on large rivers, but must also have access to large, more or less contiguous timberlands. Much pulp and paper manufacture in both North and South is thus closely integrated with the timber industry, is sited in countries which are strongholds of industrial forestry practice such as Germany, Sweden and Canada, and tends both to promote and be promoted by government bureaucracies which grant large logging concessions to big corporations.

Pulp mills find it difficult to share the landscapes they occupy with local communities pursuing a variety of agricultural, fishing and subsistence-gathering activities. Large mills work better with simplified, compact populations of factory-friendly trees, for example, than with native woodlands reserved for a variety of uses. They demand the construction of roads or waterways which run straight from cutting site to port or factory instead of a web of slow systems of transport linking one local area to another. They favour the growth of mill towns where everyone works for the industry rather than communities with diverse livelihoods. The ideology of an industry dominated by large mills, finally, tends to be one which privileges a supposedly "global" demand for pulp over varied local demands for

How "global" is "global consumption"?

Paper consumption, selected countries, 1993

Country	Kgs per capita	Country	Kgs per capita
USA	313	Thailand	30
Japan	225	Russia	30
Hong Kong	220	Brazil	28
Finland	215	Bulgaria	20
Taiwan	205	China	17
Germany	190	Egypt	11
UK	170	Indonesia	10
Australia	152	Serbia	10
Italy	132	Nicaragua	4
South Korea	128	Nigeria	3
Ireland	97	India	3
Malaysia	62	Viet Nam	1
Chile	39	Ghana	<1
Poland	31	Laos	<1

Source: *Pulp and Paper International*, July 1994

individual farm plots, diverse native woodlands, clean water and air, and the maintenance of fine-grained craft practices which make possible local control over native forests and wetlands.

The pulp and paper industry often justifies its preference for large-scale, single-centred systems over many-centred social mosaics by claiming that they help release latent economic "efficiencies". From the point of view of a farmer in, say, South-East Asia, however, the engineering of such centralized systems may well be a fighting matter, entailing uncompensated losses of water, soil, fodder, fish, transport, or livelihood generally.¹² For such a farmer, as for the paper artisan made redundant by Robert's paper machine, retrospective talk of "efficiencies" would likely be viewed as anachronistic, a way of writing out of history what are more accurately described as bitter, prolonged political and cultural struggles between radically different social systems.

Influencing Demand

Just as the pulp and paper industry, as organized today, cannot easily fit its production into a social mosaic of locally-organized landscapes, so too it cannot easily accommodate itself to "market demand". What with the easy availability of debt finance, the lack of need to buy into brand names, the sheer scale of each new state-of-the-art mill, and the temptation of many firms to become price-setters, any surge in demand during the last few decades has invariably resulted in more investment in productive capacity than is actually required to meet it.¹³

One consequence is a savage boom-and-bust cycle. In 1993, for example, after the most recent bout of overinvestment, pulp prices dropped to half of what they had been four years previously,¹⁴ leading to rampant losses, cost-cutting, closures, mergers and takeovers. Although prices have now climbed once

again to record levels, many industry figures fear that a new round of overspending is on the way. With the enormous equipment costs and long lead times required to bring huge new mills and pulpwood plantations on stream — over two years and 10-15 years respectively — it is not surprising that the industry feels growing pressure not only to invest more wisely, cooperate on pricing¹⁵ and develop better relationships with buyers, but also to plan demand in a way which might moderate future price dips. As David Clark of the European Confederation of Paper Industries recently told his colleagues, the industry must:

"fight for our future and create our own growth . . . total demand has to be stimulated. The alternative, to do nothing, could produce a static or even declining demand with serious implications for the industry, its reputation, its technology and the quality of the people it attracts."¹⁶

In this way, large scale becomes a cause as well as an effect of efforts to reorganize society in ways friendly to a few central actors.

Stimulation of paper demand is, however, nothing new, and is not something the industry has to undertake alone (*see* Box, pp.146-147). Ever since wood-based pulps inaugurated an age of cheap, large-scale paper production in the mid-1800s, new commodities — ranging from paper shirt collars, building materials, bags, toilet paper, drinks cartons, nappies, fax and computer paper, and export packaging — have been embedding paper use ever more thoroughly into business and household activities.¹⁷ In 1991, over 40 per cent of world paper production was used for packaging and wrapping, while only 30 per cent went for printing and writing and 13 per cent for newsprint, with increasing volumes of all three categories going for advertising.¹⁸

Tying demand for paper to a broad range of economic activities outside publishing has helped free world per capita paper consumption to expand indefinitely. Rising from .01 kilogrammes yearly in 1910 to 15 kilogrammes in 1950 and around 46 kilogrammes in 1993,¹⁹ it shows no signs, unlike per capita sawnwood consumption, of levelling off. "Efficiency" can no longer be plausibly described as, say, "efficiency in producing the medium for the books which society needs", but is increasingly merely an ability to produce as much paper as possible as cheaply as possible.

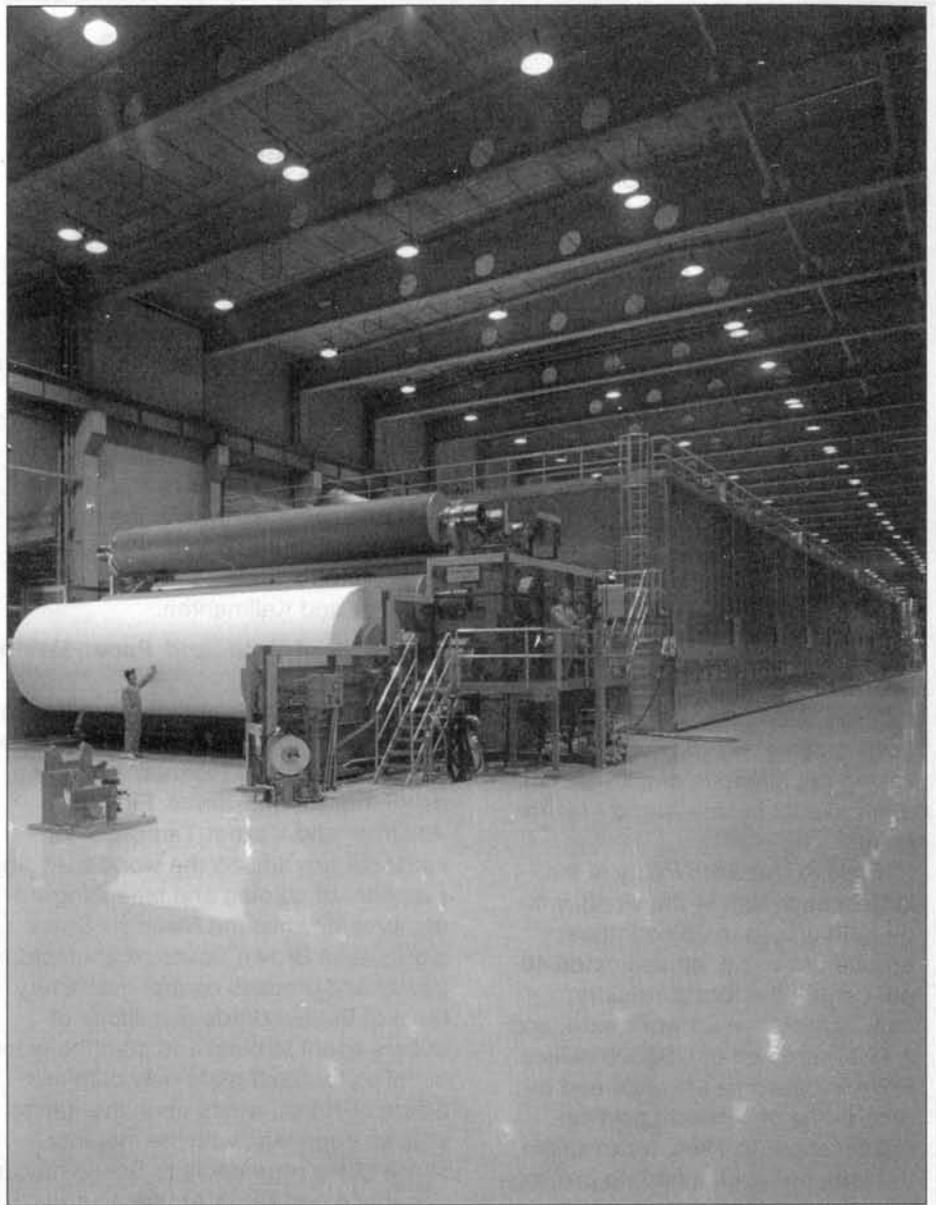
Unsurprisingly, per capita paper consumption is not a good index of literacy, being perhaps a better indicator of what conventional development economists consider "economic success" (*see* Table above). In 1993, the South plus Eastern Europe, with 84 per cent of the world's people, consumed less than a quarter of its paper and board, while the North plus the fast-growing Asian "tigers", with just over 16 percent of the world's people, accounted for over three-quarters. US citizens, while they consume 43 times as much oil as Indians, consume a full 386 times as much pulpwood.²⁰

Surfing on Resistance

Opposition to the pulp and paper industry's plans and operations — like demand, infrastructure, labour unrest and state regulation — constitute an important part of the industry's evolutionary environment, one which it is constantly seeking to modify.

Certain types of resistance are fairly easy for large actors in the industry to eliminate or circumvent, simply by redistributing their ample resources from one place to another. By themselves, such types of resistance often even wind up favouring

Paper does not intrinsically require huge machines, large technocracies, extensive road networks, intercontinental marketing mechanisms, or the mining of vast amounts of raw material in single locations. China, for instance, still supplies its immense paper needs largely through small local mills which use mainly surplus local agricultural wastes such as straw, support community economies, require no advanced infrastructure to support them, and, like village bakeries, can safely shut up shop temporarily when no one is buying without the proprietors needing to worry about paying off their machinery investments. While effluent treatment is negligible, there are no overwhelming technical or economic obstacles to running such mills cleanly. Paper manufacturing expert A. W. Western, moreover, has argued that in India and other Southern countries, "detailed comparisons between the large mill and the equivalent capacity in small mills overwhelmingly favour the smaller unit in economic terms". According to researcher Maureen Smith, there are no purely technical obstacles even to US paper and paperboard needs being met by a more decentralized network of small-to medium-size mills using a raw material base of approximately half waste paper and half non-wood crops including straw, hemp, or other regionally-appropriate materials.⁴⁰



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conditions which lead to increased concentration or centralization of the industry and its support networks — a development which, in the end, may be far from environmentally benign.

In Europe, to take one example, agitation and legislation against the industry's air and water pollution is being treated by a few far-sighted companies not as a political threat but as an economic opportunity. Hoping to transform anti-chlorine sentiment into a huge demand for totally chlorine-free pulp, for instance, the Swedish firm Södra Cell, has invested in cleaner technology of a type affordable only by the biggest corporations. If companies such as Södra succeed, they are likely only to strengthen their centralizing hold on land, forest and other resources.

By the same token, honouring the call for more paper recycling is not an unmanageable strain for an industry accustomed for over a century to using waste paper as a raw material and now being given increasing economic incentives to do so. Due largely to environmental pressures, the ratio of waste paper to other raw materials rose from 18 per cent in 1970 to 32 per cent in 1988, and continues to climb (though it has always been high in many Southern countries).²¹ Yet because recycling is now conducted within a regional or global economic system integrated largely around the interests of a few central actors, it often involves such environmentally dubious practices as

transporting huge amounts of waste paper between the US and China.²² The dumping of large amounts of waste on the international market, as happened as a result of recent environmental legislation in Germany, can also easily disrupt small local paper-collection attempts.

Environmentalist resistance to the pulp and paper industry's exploitation of forests in one country, similarly, by itself tends merely to encourage companies with sufficient resources to try to organize fibre production on a hemispheric or global scale. The most striking instance of this tendency is the expanding wood-fibre network centred on Japan.

The growth in Japanese annual paper consumption from 47 to 121 kilogrammes per capita between 1960 and 1970 was largely dependent on developing sources of raw material in the US Pacific Northwest as alternatives to expensive local fibre. But as these sources started, in turn, to become less economically, politically and biologically accessible in the 1980s (due to sawmill slowdowns, domestic competition for wood residues, forest depletion, and, finally, environmental resistance and legislation), Japanese industry consortia began to build up joint fibre ventures in Canada, Oceania, South-East Asia and Latin America — many of them lavishly subsidized by "foreign aid". By 1989, when a second surge in domestic consumption had brought yearly per capita consumption of pulp and paper to 222

A Web of Actors

Large as pulp and paper firms are — 50 paper companies today account for half of world production, and the sales of the biggest, International Paper, rank above the Gross Domestic Products of more than 75 countries — they cannot by themselves open the far-flung sites of production they exploit or capture the subsidies they require. Lending a hand are a flock of other private and public organizations, each with its own interests.

Forestry and Engineering Consultancy Firms

Consulting companies help propose, plan, design and set up pulp and paper mills or logging and plantation operations for the rest of the industry, along the way lobbying governments, finding subsidies and linking the interests of international and national business and governments.

Finland's Jaakko Pöyry is the largest such firm in the world, with over 60 offices in 25 countries around the world, an estimated 40 per cent of the forest industry consultancy market worldwide, and a 1994 turnover of US\$300 million. Pöyry's networks are wide and its record one of constant political machination. In 1994, for example, the firm, although it had no previous experience in India, was selected over 15 Indian bidders to carry out World Bank forestry projects in Kerala and Uttar Pradesh. The officer in charge of Bank forestry programmes in India was a former vice-president of the Jaakko Pöyry Group, Christian Keil. India's Inspector General of Forests, A. K. Mukerji, meanwhile, had recently

been a guest of Pöyry in Finland and was reportedly preparing to open a branch of the firm in India upon his retirement from the civil service.

The better they succeed in using *public* monies to establish or expand industrial forestry or pulp and paper sectors, the more *private*-sector work consultants are assured in the future. In 1984, for example, Pöyry won a contract from the World Bank to make recommendations for the pulp and paper industry in Indonesia; a decade later, the company was in the thick of an unprecedented boom in massive pulp-related private sector projects on Sumatra and Kalimantan.

Suppliers of Pulp- and Paper-Making Technology

The dominant suppliers of machines to the pulp and paper industries tend to be based in the same Northern countries as the consultancy firms. Finland's Ahlstrom and Valmet-Tampella, for instance, are among the world's leading suppliers of pulping and bleaching equipment, while the Swedish-Swiss giant, Asea Brown Boveri, manufactures power and process control machinery. Most of the hundreds of millions of dollars spent to build and plan the wood supplies for each giant new pulp mill, South or North, winds up in the hands of such suppliers, with the majority share going repeatedly to Scandinavian, Japanese and North American firms and consortia.

Industry Associations and Alliances

Organizations such as the European Confederation of Paper Industries (CEPI), the American Forest and Paper Association, and the Thai Pulp and Paper Industries Association help firms win subsidies from governments, tackle public relations, assess markets,

influence environmental regulation, and prevent environmentalists from dividing industry over issues such as recycling and chlorine-free paper production. Sweden's pulp and paper associations, eager to gain more political clout in Brussels at a time when the industry is rapidly internationalizing throughout Europe, were influential in persuading the country to join the European Union.

Bilateral Aid Agencies

While aid departments are driven by conflicting bureaucratic, foreign policy and "foreign aid" goals, their principal function in the nexus of pulp and paper is to "launder" public monies used to pay for the work of Northern corporations in the South. Finland's FINNIDA and Sweden's SIDA, for instance, have bankrolled Finnish and Swedish firms' plantation and pulp and paper mill planning, exports and technical services for countries such as the Philippines, Thailand, Sri Lanka, Nepal, Zambia, Kenya, Viet Nam, Mozambique and Tanzania. Japan's JICA, meanwhile, has provided handouts for Japanese plantation research, planning and trials in Chile, Uruguay, Paraguay, Indonesia, Thailand, Malaysia and other countries, while its Overseas Economic Cooperation Fund has subsidized Japanese corporate wood chip consortia. Without such subsidies, many forestry consultants and pulp and paper equipment suppliers would not survive. Accordingly, bilateral aid agencies often compete fiercely with each other to ensure that their corporations' services are the cheapest offered to Southern elites.

State Investment or Export Credit Agencies

Other official organizations provide additional assistance. When a paper-

kilogrammes, Japan was importing wood chips or pulp from sources as far-flung as Brazil, South Africa, Fiji, Finland, Thailand and the South-Eastern US. Faced by rural protests in Thailand, and fearing rising environmentalism in Australia and Chile, Japanese companies were also laying plans to secure supplies from the interior of northern Canada, Viet Nam, Siberia, Argentina, Venezuela and West Papua. Today, the average wood fibre embedded in a sheet of Japanese paper or cardboard has travelled more than 6,000 kilometres from its point of origin.²³

As native forests are exhausted and local resistance provoked, pulp and paper industries are turning increasingly to industrial tree plantations to furnish large amounts of fresh, uniform raw material on a smaller land base, avoiding conflict with other land uses. Although industrial plantations currently supply considerably less than a quarter of world demand for

pulpwood, this proportion is bound to rise, given deforestation, the limitations of recycling (fibres can only be reused a few times before disintegrating into dust), and the resistance of much of the industry to non-wood materials.²⁴

This shift to plantation pulpwood provides more incentives for the industry to move raw fibre production to new regions, especially to the South. In countries such as Brazil and Indonesia, trees such as eucalyptus or acacia grow faster, land is cheaper, and companies are able to benefit from lower-cost labour and severer political repression than in the North.²⁵ All this entails low prices for wood, which, as Robert A. Wilson of the Anglo-French conglomerate Arjo Wiggins Appleton remarks, is "the strategic driver in the industry . . . the key competitive differentiator."²⁶

Pulp mills are often integrated with the new Southern

cycle-related economic recession engulfed Finland in the early 1990s, for example, the country's Premixed Concessional Credit Scheme helped equipment suppliers such as Tampella, Valmet, Sunds Defibrator and Ahlstrom find new outlets in Asia. Annual Finnish machinery exports to Indonesia surged from nil to over US\$95 million between 1990 and 1993, while those to Thailand increased nearly fivefold over the same period. Similarly, the state Finnish Fund for Industrial Cooperation is backing the partly state-owned Finnish paper giant Enso Gutzeit in a joint venture to develop a 1,390-square-kilometre acacia pulpwood plantation in western Kalimantan on a site riven by conflicting land claims.

The US's Overseas Private Investment Corporation (OPIC) and Export-Import Bank, meanwhile, are helping to lubricate an inter-governmental deal which will result in the US industry's sending billions of dollars' worth of pulp and paper, logging and other machinery to Siberia in exchange for Russian wood. Britain's Commonwealth Development Corporation (CDC), which draws around 45 per cent of the more than £150 million it invests annually directly from the British "aid" programme and the remainder largely from profits made on aid-budget seed money, has invested in pulpwood plantation companies in Asia and Africa.

Multilateral Agencies

Multilateral development banks (MDBs) such as the Asian Development Bank, the World Bank and the European Bank for Reconstruction and Development also shower taxpayers' money on consultancy, construction and machinery firms. Northern firms, backed by their government bureaucracies, have a particular advantage in competing for these windfalls. US directors of MDBs,

for example, have been instructed to impress on the banks the virtues of "one-stop shopping" at US firms, while a satellite industry of consultants — many of them former World Bank staff or the spouses of current staff — is on hand to help supply inside information on MDB procurement. MDBs and Northern governments, in addition, hold regular meetings in Northern capitals to help the Banks and prospective Northern contractors get to know each other.

In recent years, industry consultants have received funds from MDBs and other multilateral agencies such as FAO and UNDP to research business opportunities or plan or execute industry-benefiting forestry development schemes in more than a dozen African, Asian and Latin American countries.

National and State Governments

Governments end up furnishing some of the most important subsidies for the pulp and paper industry. In the last decade, for example, the Canadian province of Alberta has bestowed over \$145 million in infrastructure gifts and \$400 million in debentures on Japanese paper corporations and joint ventures. An additional \$47.1 million has been committed by Canadian governments for public relations for overseas forest industries extracting Canadian pulpwood.

Under the prodding of MDBs, meanwhile, Southern governments have set up or augmented state institutions which subsidize the growth of local and foreign commercial elites. Thailand's Board of Investment, for example, provides tax write-offs, technology import exemptions, and rent-free loans to pulpwood or pulp industries whose activities often erode the livelihoods of rural dwellers. As Thai economist Pasuk Phongpaichit notes, such actions fly in the face of economics:

"Economic theory tells us it's all right to subsidize education because it benefits the whole society. But while eucalyptus and pulp and paper industries earn profits for some, they cause problems for society. Therefore, economic theory tells us, they should be taxed. But instead the government does the opposite. This is matter of influence and power".

Many forestry departments, in addition, divert the vast swathes of land over which they have jurisdiction towards industry, and away from their occupants or from other uses. In Indonesia, 70 per cent of whose land is managed by the state forestry bureaucracy, industry is charged as little as US\$0.30 per square kilometre per year for the use of plantation land, and plantations are further subsidized with revenue gained from logging.

Costs of land and labour are also kept down in many countries through subsidies provided to military and police forces by local or foreign taxpayers. State university forestry faculties or research organizations — often run by foresters trained exclusively in industrial forestry in countries such as Finland, Canada and the UK and sometimes even benefiting from direct industry support — can be relied upon to provide useful lobbying and technical support for commercial schemes.

Sources: Pulp and Paper International; World Resources Institute; The Nation (Bangkok); The Statesman (Delhi); Financial Times; Jaakko Pöyry; Finland National Board of Customs; Jakarta Post; Commonwealth Development Corporation; World Bank; UK Department of Trade and Industry; Interforest; Taiga News.

plantations. This is not only because it makes more economic sense to combine wood and pulp production than to keep them separate, and to export fibre in the more concentrated form of pulp than in the watery form of wood chips, but also because environmental regulations are looser in the South than in the North, foreign aid subsidies easier to obtain, and consumption, especially in the Asia-Pacific region, likely to grow faster. Thus Brazil, Chile, Portugal, New Zealand and South Africa, none of whom have been traditionally strong in the pulp and paper industry, are now among the top nine exporters of pulp, their principal customers being in industrialized countries. Indonesia, meanwhile, whose production of pulp grew at an average rate of 29 per cent yearly between 1980 and 1991, is already one of the top seven world paper shippers.²⁷

Resistance provoked by this shift to the South, of course,

presents the industry with still more problems. Providing it is scattered, however, it can often be handled fairly easily. Pulp or pulpwood businesses in South-East Asia, for example, have blunted community resistance by approaching individuals with money, land, goods or jobs, or by setting up gambling schemes to relieve plantation opponents of their money. More intransigent opponents have been subjected to beatings, murder threats, accusations of treason or Communism, or harassment of their families by government employees or even religious leaders. If resistance to seizures of land for plantations is stubborn yet isolated, small-scale, poorly-coordinated, and out of the domestic or international public eye, military suppression may result; if protests are more widespread and well-coordinated, contract farming schemes may be rolled out instead as a way of gaining local people's active collaboration in raw material production.²⁸

Freedom to Plant

Other sorts of resistance are more difficult to deal with. No paper corporation, faced with coordinated, publicly-visible opposition to the development of large-scale, new industrial pulpwood plantations across large areas of the globe, can buy it off everywhere it arises, smash it completely, or shift its search for raw materials to another planet. Nor can the industry, as presently constituted, countenance an open and persistent discussion of reducing or even stabilizing demand for pulp and paper in industrialized countries. Skewed world paper consumption must remain, for paper executives, evidence not that high consumers are consuming too much but that low consumers are consuming too little.

Just as today's pulp and paper industry cannot acquiesce in existing demand or existing social mosaics, so, too, it cannot simply "surf" on these more threatening types of opposition, translate them into "economic signals", or evade them by shifting operations elsewhere. Rather, its network must actively colonize the society of such resisters just as its network infiltrates societies of consumers or of subsistence farmers.

Here a subtler strategy comes into play: that of divide and conquer. The idea is to discredit or suppress critics; cultivate critics' potential, but as yet uncommitted, allies; and block communication and alliances between the two groups — for instance, between critics of plantations in the South and their potential allies among environmental organizations in the North. Thus Arjo Wiggins Appleton pulpwood plantation executives O Fernandez Carro and Robert A Wilson urge their colleagues not to target "apparent opposition" if that means "forgetting the vast mass in between: the public". Politics, they continue:

"provides the packaging and the vehicle to achieve the industrial objectives. Success is measured by the freedom to plant fibre crops, recognizing the sum total of all the political forces (in the broadest sense). There are two elements to the political subsystem: the message and the target. The message needs to be short, nontechnical, and fundamental: for example, 'Trees are good. We need more trees not less'. Our objective should be to create and move inside an ever-increasing friendly circle of public opinion".²⁹

In creating such a "friendly circle of public opinion", the industry often benefits from a global reach longer than that of its critics in the South. Industry spokespeople, for example, frequently attempt to seek support from urban or Northern audiences, including environmentalists, by affirming that pulp production has nothing to do with logging natural forests in the South, insisting disingenuously that new trees which have been planted on "degraded" and "unused" land are used instead. Isolated from grassroots groups in the South and from internal industry discussions, most Northern environmentalists have been unable to reply with the facts, namely that:

- most of the giant new Scandinavian-planned export pulp mills in Sumatra are being fed in their initial stages by mixed tropical hardwoods;³⁰
- in Chile, Brazil and Indonesia, the way has often been cleared for monoculture pulpwood plantations by logging native forests;³¹
- in Thailand and elsewhere, the establishment of plantations on farmland, pasture or commons has often driven the inhabitants to clear natural forests elsewhere;³²

- the industry is little interested in investing in "degraded land" but rather, in the words of Shell International, in "land suitable for superior biological growth rates for those species the market wants" as well as "year-round water" and easy access to nearby processors or ports.³³

Engineered Consent and Astroturf Groups

To help colonize democratic discussion and replace it with a more predictable type of interchange, pulp and paper companies and industry associations have also set up public relations (PR) operations in all major national markets. The object is not merely to "engineer consent" — using such means as advertising, lobbying, purchasing expert testimony, distributing press releases, commissioning books, manipulating journalists, launching opinion polls and creating "community advisory panels"³⁴ — but also to monitor industry critics, with an eye to weakening their links to other sectors of the public.

In 1993, for example, Finnish consulting firm Jaakko Pöyry began publishing a confidential quarterly intelligence report on environmentalist thinking and activities, aimed at a clientele of wealthy companies. Industry-retained PR firms also maintain files on activist groups, their leaderships, methods of operations, anticipated reactions to new products, funding sources and "potential for industry relationship", with a view to finding out "what's motivating them, how serious they are, what they will consider 'success'".³⁵ Such firms advise pulp and paper corporations and their allies on how to offer financial support to environmentalist groups which need funding and "respectability", as well as how to go about putting critical individual environmentalists or former regulators on their payrolls.

PR companies may also infiltrate environmental meetings in the guise of activists or "housewives" to gather information or "guide" discussions; pose as journalists in order to obtain previews of research results which might be damaging to industry; or sabotage promotional tours of books critical of industry. One such firm, the US's Burson-Marsteller — which, with annual fees totalling over US\$200 million, over 2,000 employees, 62 offices in 29 countries, and its own "Environmental Practice Group", is the world's largest PR company — includes among its clients Scott Paper, TetraPak, Alliance for Beverage Cartons and the Environment, Shell, the Government of Indonesia, and the British Columbia Forest Alliance (a forest industry front group created by Burson-Marsteller).³⁶

The practice of setting up of fake "environmentalist" groups with a pro-industry agenda (including "astroturf" grassroots groups, named after the artificial grass used in some US sports arenas), well-established in some Southern countries, is currently spreading in the North.³⁷ Among the founding donors of the Center for Defense of Free Enterprise, the leading think tank and training centre for "Wise Use" groups, are Georgia-Pacific and Boise Cascade, the world's third- and twelfth-largest pulp and paper firms (*see* "The 'Wise Use' Backlash", pp. 150-156). The ploy of cultivating public hostility towards activists by framing them for various outrages including bombings and corruption — historically used widely by Southern security apparatuses against local environmentalists, by the Federal Bureau of Investigation against US black, native American, and civil rights movements, and by the UK's MI5 against trade unions — is likely to be used more extensively in the future against Northern environmentalists as well.³⁸

Creating a Social Environment

Today's large pulp and paper firm, like a biological organism, is constrained by its inheritances — including immense, unwieldy machines and a reliance on wood fibre — and owes its survival largely to other organizations with which it has evolved in cooperation or symbiosis (see Box, pp.146-147). Like a plant or animal, such a company does not adapt passively to a fixed environment, but, with the help of its allies, constantly recreates it — undermining forms of power necessary for stewardship of

local land while extending the realm of uniform rules of exchange; constructing new financial, physical, legal, and cultural networks by which resources and subsidies can be pumped to central locations and new forms of influence exercised over workers and resisters; recanalizing customs and dreams into forms satisfiable through paper consumption; and attempting to substitute public relations for the risks of democratic debate. Large, destructive technologies, rocketing consumer demand and the growing phenomenon of globalization are products less of "economics" than of politics.³⁹

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The "Wise Use" Backlash

Responding to Militant Anti-Environmentalism

by

Brian Tokar

In the United States today, "Wise Use" has become the slogan of a right-wing attack on nearly every aspect of environmental thought and action. The aim of Wise Use is to discredit environmental organizations, roll back environmental regulations and assert unlimited rights for property owners. Although Wise Use groups often have populist names and a grassroots image, the movement has been manipulated by corporations and conservative think-tanks, supported by Republicans in Congress and linked to the highly-mobilized forces of the Christian Right. An understanding of the political, social and cultural factors which give Wise Use groups their appeal in rural and suburban communities is essential if the influence of Wise Use is to be countered.

The wise use of natural resources has been a modest goal shared for over a century by many environmentalists, conservationists, outdoor sports enthusiasts and most people of a moderate to Left political persuasion. Forester Gifford Pinchot coined the term in 1907 when he described conservation as the "wise use of resources".

Pinchot was the first head of the US Forest Service, set up in 1901 by President Theodore Roosevelt to manage "more rationally" large portions of forest which had come into government ownership following repeated attacks on Indian lands during the nineteenth century. Some of this land was set aside as national parks and reserves, starting with the Yellowstone National Park in 1872, followed by Yosemite and the Grand Canyon.

Conservationist agendas, however, conflicted from the outset with the government's overriding goal of promoting Western settlement and economic development. In the period of rapid growth after the First World War, the lands epitomized in the national consciousness by mountains, deserts and vast open spaces were sought primarily for their natural resources. By the 1920s, land management agencies such as the Forest Service and the Bureau of Reclamation (which

had been established to manage Western water resources for irrigation and increased settlement) were so dominated by anti-conservation forces that these agencies were actively encouraging extractive industries such as mining and logging in the public lands of the Western states— and using the rhetoric of the "wise use" of resources to do so. As author Robert Gottlieb writes:

"Through the 1920s and into the 1930s, the language of conservationism was increasingly appropriated by the resource-based industries and other industrial interests . . . Industry interests were also able to adopt the principles of multiple [wise] use as justification for their own environmentally-destructive activities, such as the discharge of untreated wastes into streams or other water sources . . . By the close of the progressive era in the 1920s, conservationism as expertise and rational management of resources for business uses had emerged as the movement's dominant ideology, an ideology eagerly embraced by the very industries an earlier generation of conservationists had so forcefully challenged."¹

Wise Use in the 1990s

The appropriation of conservationist language continues today. A three-day "Multiple Use Strategy Conference" was held in Reno, Nevada in 1988 which was attended by individuals representing nearly

200 organizations and set the stage for a new campaign "to destroy environmentalism."² The gathering was held partly in response to the rhetorical attempts of the then Republican Presidential candidate, George Bush, to ally himself with the environmental movement which was experiencing a wave of popular support. Superficial as Bush's statements were, they had raised alarm among the Right: even the most casual acknowledgements of the legitimacy of environmental concerns stood in marked contrast to Ronald Reagan's dismissive disparagement of environmentalism.

The state of Nevada, famous for its gambling resorts, its vast desert landscapes and its culture of extreme individualism—inspired by the lasting myths and legends of the Western cowboys—was an appropriate setting to bring together industry associations such as the American Petroleum Institute, the American Mining Congress, the Mining Association of British Columbia, the National Rifle Association, the Council of Forest Industries and the American Freedom Coalition; anti-environmental law firms (such as the Mountain States Legal Foundation which had been run by James Watt, Reagan's Interior Secretary, and which specialized in litigation against environmentalists and opposition to environmental legislation); corporations such as Exxon, DuPont, MacMillan Bloedel, Louisiana-Pacific, Georgia Pacific and Weyerhaeuser; motorcycle clubs and off-road vehicle groups; and ambitious right-

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wing publicists like Ron Arnold and Alan Gottlieb of the Center for the Defense of Free Enterprise (CDFE).³ Arnold had established himself in the 1970s and 1980s as a brash publicist for the timber and pesticide industries, while Gottlieb was well-known in Republican circles as a leading fundraiser for Reagan's presidential campaigns, and president of two leading gun organizations.

In 1989, CDFE published *The Wise Use Agenda: The Citizen's Guide to Environmental Resource Issues*, a book which enshrined Arnold and Gottlieb as the leading spokespeople for a new brand of anti-environmental reaction and gave the phenomenon its name.⁴

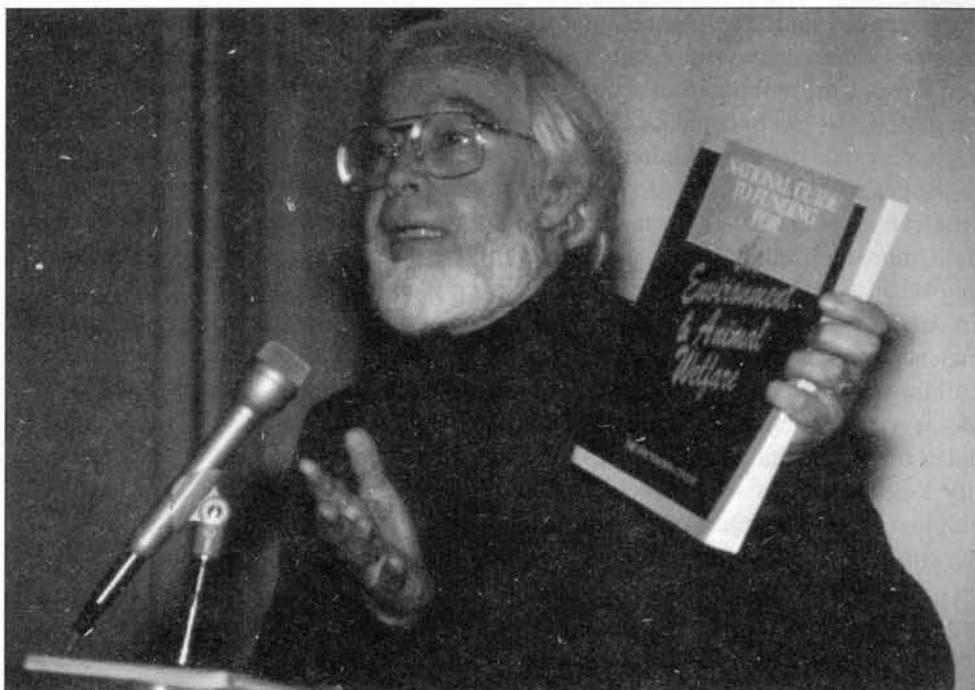
The Wise Use Agenda listed 25 measures long sought by resource industries to repeal most of the policies concerning both ownership and regulation of public or government-held land in the Western states of Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. These measures would increase petroleum and timber extraction from now-protected lands in Alaska, further logging of old-growth forests, raise timber harvest quotas in the National Forests, increase commercial concessions to exploit natural resources in National Parks, transfer national land and water rights to the individual states and private individuals, and provide national funding for backwoods trails for motorized off-road vehicles.⁵

The book expressed disbelief in global environmental problems such as global warming, ozone depletion and acid rain. It advocated various policies to hinder environmental and activist groups including liability for "obstruction" and "agricultural product disparagement" and proposed economic or community impact statements as a counter-measure to environmental impact statements required for developments.

Professional Grassroots

It took more than policy proposals, however, for these ideas to come to national prominence and to attract allies beyond the narrow base of timber, mining and agricultural interests. In an interview with journalist David Helvar, Arnold explained the "Wise Use" strategy:

"In an activist society like ours, the only way to defeat a social movement is with another social



Although published over five years ago, Ron Arnold is still promoting CDFE's *The Wise Use Agenda*

movement. So now we had a nonprofit mechanism to work with [CDFE] and told industry, 'let us help you to organize our constituencies'."⁶

Arnold has travelled throughout the Western United States and Canada, advising industry to set up grassroots corporate front groups and to send money his way, "because citizens' groups have credibility and industries don't."⁷ As he told the Ontario Forest Industries Association in 1988:

"The public is completely convinced that when you speak as an industry, you are speaking out of nothing but self-interest. The pro-industry citizen activist group is the answer to these problems. It can be an effective and convincing advocate for your industry. It can utilize powerful archetypes such as the sanctity of the family, the virtue of the close-knit community, the natural wisdom of the rural dweller . . . And it can turn the public against your enemies . . . I think you'll find it one of your wisest investments over time."⁸

Thus many Wise Use groups have quasi-populist names such as People for the West, the Abundant Wildlife Society, Save Our Lands and the Environmental Conservation Organization. Many receive huge donations from resource-extracting industries, including some of the large timber, mining and oil corporations, and benefit from the services of corporate public relations firms such as Burson-Marsteller, and Hill and Knowlton. They

claim to speak for average working people whose jobs are said to be threatened by environmental regulation and for small property owners who may be restricted by local planning and zoning regulations, expansion of national wetlands protection and protection of fragile patches of wilderness adjacent to populated areas. "Wise Use" groups based largely in the West have forged alliances with "property rights" groups which have been most active in the Eastern states ranging from New York, Massachusetts and New Hampshire in the North all to the way Florida in the South.

Many Wise Use groups have large direct-mail fundraising operations and full-time lobbyists, as well as small but dedicated networks of activists ready to pressure their state legislators and members of Congress by fax and telephone at very short notice. Indeed, organizations like CDFE function largely as fundraising instruments. After the relaxing of Cold War tensions and the collapse of the Soviet Union in Eastern Europe, the multibillion dollar, right-wing direct-mail fundraising industry needed a new set of issues if it was to be sustained. As Alan Gottlieb says, "for us, the environmental movement has become the perfect bogeyman," while his colleague Ron Arnold adds, "fear, hate and revenge are the oldest tricks in the direct-mail book."⁹

According to an article in a leading journal for political campaign consultants, "professional grassroots lobbying" — including the creation of volunteer

organizations and “the planned and orchestrated demonstration of public support through the mobilization of constituent action” — has become an \$800 million a year industry in the United States.¹⁰ A “Buyer’s Guide” printed alongside the article lists over 100 companies in the field, more than half of which are directly involved in organizing and “community coalition building.” Author Ron Faucheaux reports that “technology makes building volunteer organizations as simple as writing a check.” He describes in detail how consultants are hired to identify key supporters of a Bill, mobilize employees of affected companies, and maximize personal contact between elected officials and influential constituents. This approach has been used by interests as diverse as the insurance in-

dustry, nurses’ and teachers’ organizations and the National Rifle Association, as well as by companies such as General Motors, Exxon, McDonalds and numerous industry associations. “Looking ahead, most participants predict that more grassroots services will be deliverable with overnight speed,” says Faucheaux, easily overwhelming the limited resources of local and even national environmental groups.

The relationship between the activities of corporate lobbyists and consultants and the apparent acceptance of anti-environmental agendas by a vocal and increasingly active minority of Americans is a complex one that often defies simple explanations. Despite their populist and anti-government rhetoric, the specific policy proposals advanced by Wise

Use and other anti-environmental groups serve corporate interests and property speculators. Many groups originated with the right-wing policy think-tanks which gained prominence during the Reagan years and which still receive millions of dollars in corporate contributions. They include the Heritage Foundation, with an annual budget of \$20 million; the American Enterprise Institute; and the libertarian Cato Institute. Each of these organizations has large teams of researchers, writers, lawyers and policy analysts. Each has tirelessly advanced proposals to eliminate government regulation of business activities, proposals which were generally laughed at in the 1970s, raised eyebrows in the 1980s, and are being written into national legislation today (See Box below).

Congressional Agenda

The Wise Use movement is closely allied with Republicans in the US Congress, several of whom were elected in 1994 — when Congress became Republican-dominated for the first time in 40 years — on an overtly anti-environmental platform. As a result, renewal of many of the landmark environmental laws passed in the 1970s such as the Clean Air and Clean Water Acts, the Endangered Species Act and Superfund is being held up by unexpected obstacles, delays and consistent efforts to weaken them. Three major themes or legal phrases dominate the discussion: unfunded mandates, regulatory takings and risk assessment, all of which have profound implications for the maintenance of environmental regulation in the United States.

• **Unfunded Mandates**

Unfunded mandates are regulations that state and local governments are mandated to follow by national law although they are not entirely supported by national taxation. They include everything from workplace health and safety rules to requirements for sewage treatment plants. As local governments have found it increasingly difficult to raise tax revenues to maintain essential services, largely because of reductions in tax rates for high income citizens during the 1980s, reducing the burden of federal regulations has become a popular cry for politicians seeking re-election to state and local offices. One of the first measures passed by the Republican-controlled Congress in 1995 and signed by President Clinton with little public controversy was a law which limits the national government’s right to impose such unfunded mandates.

• **“Takings” (Private Property Rights)**

“Takings” is an obscure legal concept dating back to the Fifth Amendment of the US Constitution which provides against the taking of private property for public use “without just compensation.” Right-wing legal advocates have relentlessly pursued this concept in dozens of lawsuits over the past several years, seeking payments of damages when national laws mandating cleanup of toxic waste, regulation of water rights, restrictions on mining in wilderness areas and limits on development in wetlands are enforced.

The US Claims Court (which hears property cases not involving injury claims) is now dominated by judges appointed during the Reagan and Bush administrations, who have passed judgements in favour of companies wishing to build on wetlands, expand coal and limestone mining, and numerous other destructive activities. These claims have been bolstered by recent Supreme Court decisions such as a 1992 ruling in which an owner of beachfront property in South Carolina was granted compensation because of state laws which limited the development of his land. Although the Wise Use movement claims that there have, for instance, been a rash of “takings” because of regulations to protect wetlands, in fact more than 98 per cent of the permits to develop which are requested are granted.

Bills now before Congress would require cash payments by the government to anyone whose property value decreased 10 percent or more due to regulatory actions. This would be a substantial subsidy to polluting industries and those property speculators; each would be entitled to a substantial government pay-off to restrain them from polluting activities. As journalist André Carothers points out:

“the wording and approach of the various bills differ, but the result is the same: raise the potential cost, either financial or political, of passing any legislation perceived as ‘environmental’ to the point where voting for it becomes electoral or fiscal suicide”.

The property rights which would be protected from “takings” if these proposals are approved include the use of nationally-subsidized water resources which ranching and mining activities in the arid West have always depended on. The expectation of a sustained flow of government-subsidized amenities — from water to logging roads to mining royalties fixed at nineteenth century rates — is a huge contradiction in the arguments of anti-regulation advocates that is rarely mentioned in mainstream media accounts.

• **Risk Assessment/Cost Benefit Analysis**

Risk assessment seeks to measure precisely the extent of the risk being regulated and to compare it to other risks people face; cost benefit analysis is a requirement to identify the costs of an action, quantify the benefits in economic terms

Media Awareness

Highly-orchestrated campaigns have contributed to the success of anti-environmental initiatives. With environmental coverage in the mass media down 60 percent since 1989,¹¹ and television networks relying more upon packaged stories produced by outside public relations firms, it is difficult for most people in the US to obtain the independent information needed to counter the arguments of anti-environmental advocates. Meanwhile, owners of the corporate media have learned from the experience of the anti-Vietnam War movement in the 1960s and the environmental movement of the late 1980s and early 1990s that media exposure — or the lack of it — can play a crucial role in the emergence and decline

of social movements

The mass media has thus played a decisive role in publicizing and spreading anti-environmental initiatives. Angry, vocal constituencies have traditionally attracted the largest share of media attention, especially when their demands are so immediately resonant with the corporate agenda.

In the early 1990s, the highest-profile activities of anti-environmental groups were carefully staged demonstrations of loggers and millworkers in northern California and the Pacific Northwest in opposition to the protection of old growth forests and the habitat of the endangered northern spotted owl.¹² As timber companies automated their operations and moved large lumber mills to Mexico, media images of angry loggers demon-

strating against environmentalists sustained corporate efforts to promote the myth of jobs versus the environment. Logging towns throughout the region were strewn with yellow ribbons (used since the 1970s' Iran hostage crisis as a symbol of patriotism and support for US military adventures) as well as graffiti and bumper stickers decrying environmentalists and spotted owls as a dual threat to the survival of their communities.

Some of these acts were genuine, though misguided, responses to increasing economic insecurity. But they were also carefully manipulated for maximum media impact. Timber companies would pay workers to attend anti-environmental rallies and would even pay their employees' membership of anti-environmental organizations.¹³

and ensure costs do not exceed benefits. Controversies over risk assessment and the applicability of cost-benefit analysis to environmental regulation have occupied economists and public officials since the 1970s. Despite decades of research on the quantitative valuation of intangible qualities — from human lives to a scenic view — such analyses are ridden with uncertainties and implicit value judgments, even when grounded in apparently reliable data. Some see a more devious agenda; Peter Montague of the Washington-based Environmental Research Foundation said in a recent interview:

"Risk assessment is basically a fraud. It's a process the goal of which is to obtain permission to kill people and to destroy the environment . . . The whole thing is unconscionable, it's immoral, it's a form of premeditated murder."

Bills proposed by the Republican Congress would require detailed risk assessments for any future regulatory measures, in all probability overriding many existing measures to protect the environment and public health. These proposals would embed the requirement for risk assessment in an unprecedented bureaucratic maze of technical criteria, administrative reviews, economic impact analyses and judicial appeals. A recent analysis of these proposals by Public Citizen, a Washington-based consumer group, concluded:

"By adding layers of bureaucratic red tape to the rule-making process, the proposed legislation will render unenforceable many of our most important health and safety laws and cripple the ability of agencies to implement and enforce those laws."

Such "paralysis by analysis" would be achieved without actually repealing any existing laws. Protections most US Americans take for granted, including bans on DDT and leaded gasoline, highway safety rules and testing requirements for new medications, would probably never have been enforced if such legislation had been in place. For a political movement that has based virtually its entire public appeal on calls to "get government off people's backs," this is a cynical attempt to smother existing protections in extraneous bureaucratic requirements. In addition, the technical panels appointed to evaluate risk assessments would, by law, be unable to exclude those with conflicts of interest from participating. "Under this bill, we would return to the days when powerful, special interests were given backdoor, unaccountable access to shape government policies, programs and

protections," reports Gary Bass of the independent monitoring agency OMB Watch, an NGO which monitors the activities of the White House's Office of Management and the Budget (OMB) and which was one of the first organizations to disclose the full implications of the Republicans' anti-regulatory proposals. Administrator of the Environmental Protection Agency Carol Browner has said that "in many instances, risk assessment has become a code word for those who want to waken our efforts to protect public health and the environment".

Industry lobbyists have also been directly involved in an unprecedented way in the drafting of legislation. For example, lobbyists from the chemical, paper, food processing, petroleum, mining and metal finishing industries proposed a large number of waivers, exemptions and changes in enforcement procedures to the Clean Water Act, nearly all of which were inserted unchanged in the final Bill. The Bill was passed by the House of Representatives in May 1995 and would end protection of most wetlands, virtually abolish controls on non-point source pollution and prevent states from passing water standards more stringent than national rules.

Similarly, lobbyists for the timber and paper industries have helped draft a new Endangered Species Act which replaces existing enforcement provisions with a voluntary programme involving landowners' cooperation in the protection of endangered animals and plants, a programme which would be largely based on monetary incentives, paid for with sales of public land to private interests.

Anti-environmental advocates in Congress have also escalated their use of a parliamentary device, appending controversial anti-environmental measures to everyday appropriations bills. The most blatant example of this was a budget bill, passed by Congress and signed by President Clinton in July 1995, which contained amendments to expand "salvage logging" in the national forests to include not only fire- and flood-damaged timber, but any stands considered susceptible to fire, flood damage or disease, and oil drilling in the Alaskan wilderness, while suspending enforcement of various provisions of the Clean Air and Endangered Species Acts.

Incitement to Violence

The impact of the campaigns against environmentalists has been heightened by the organizers' penchant for sensationalism and rhetoric full of disguised and overt incitements to violence. Ron Arnold has called for a "holy war against the new pagans who worship trees and sacrifice people,"¹⁴ while property rights organizer in New York's Adirondack Mountains, Dale French says, "We have to look at all of them [environmentalists] as the enemy because we're at war."¹⁵ A recent request for funding, sent to various corporations stated:

"Like it or not, we are involved in a war with the preservationists and animal rights radicals. To win this war, we must gain control of the hearts and minds of the public".¹⁶

An organizer of the Sahara Club, a southern California group of dirt bike enthusiasts which is notorious for making death threats against prominent environmental activists throughout the state, told a journalist, "You can't reason with eco-freaks, but you sure can scare them."¹⁷ Meanwhile, President Reagan's Interior Secretary, James Watt, said in 1993:

"If the troubles from environmentalists cannot be solved in the jury box or at the ballot box, perhaps the cartridge box should be used".¹⁸

Activists' homes have been burned, cars vandalized and government offices attacked. In 1990, two prominent Earth First! campaigners in the redwood forests of northern California, Judi Bari and Darryl Cherney, were seriously injured when a bomb exploded under the front seat of Bari's car. While Bari in particular had long been subjected to threats from groups such as the Sahara Club, subsequent investigations into the bombing incident and its aftermath produced disturbing evidence of the complicity of timber corporations and the Federal Bureau of Investigation.¹⁹ One of the most persistent records of violence has been in the Adirondacks, a forest preserve and state park 300 kilometres north of New York City where economic pressures from land speculation and resort development, and high rates of poverty in neighbouring towns have produced an exceedingly volatile and threatening climate. Public confrontations between environmentalists and counter-demonstrations have come to blows while activists' homes and families have been repeatedly threatened.

The Militia Connection

Perhaps the most threatening wing of the anti-environmental movement in the United States is the County Rule movement, organized by ranchers who seek to overturn national government control of Western range lands, placing them instead under the mandate of county officials who are friendlier to local landowners. In Nye County, Nevada, for example, landowners have reopened roads closed by the Forest Service, refused to pay minimal fees for grazing cattle on public lands (which are a fraction of the cost of grazing on private lands), and opened mines without the necessary permits. National government land management officials in Nevada, New Mexico and Idaho have been threatened at gunpoint; government buildings and camp grounds have been bombed.²⁰ Over 100 Western counties have passed ordinances seizing authority over public lands, renounced national environmental laws and brought in prominent right-wing lawyers to defend these moves in court.²¹ Many local residents are concerned that county rule is one step closer to privatization of public lands and vastly increased rates of resource exploitation, but dissenting voices are often silenced by threats of intervention by armed militias.

The vast majority of people have only become aware of the rural militia movement since the April 1995 bombing of a government office building in Oklahoma City. The prime bombing suspect, Timothy McVeigh, and several of his alleged accomplices have close ties to the militia of Michigan, one of the most inflammatory of these groups. For several years, groups of gun enthusiasts, right-wing conspiracy theorists and disaffected veterans among others have gathered in isolated areas to practise military manoeuvres and trade white supremacist lore. These private, armed militias are tied to traditional right-wing groups as well as to secretive white supremacist organizations including the neo-Nazi Aryan Nations and Christian Identity movements.²² With the end of the Cold War, such groups increasingly view the United States government as the main enemy of personal freedom and environmental regulation as one of its most threatening manifestations. They have emerged from the same reactionary social milieu that, in the name of a militant Christianity, has spawned bombings of women's health clinics and murders of doctors who perform abortions.

In the past two years, these militias, Wise Use groups and white supremacists have come to depend on each other for recruitment and sustained publicity. Wise Use founder Ron Arnold — who said in a 1993 interview, "When I say we have to pick up a sword and shield and kill the bastards I mean politically, not physically"²³ — served on the advisory board of the National Federal Lands Conference, in effect the coordinating body for the County Rule movement.²⁴ An editorial in a 1994 Conference newsletter dated that:

"At no [previous] time in our history since the colonies declared their independence has our country needed a network of active militias across America to protect us from the monster we have allowed our federal government to become."²⁵

A former director of the Bureau of Land Management, Jim Baca, said at a recent press conference:

"I can't say every member of the Wise Use movement is a member of the militia, but the threads are there. The rhetoric is the same: anti-federal government. And lawmakers' influence pumps everyone up."²⁶

Several newly-elected Republican Members of Congress are open supporters of anti-environmental campaigns, and their speeches are used as recruitment tools by militia groups. While supportive speeches from public officials bolster militia recruiting, the presence of militant right-wing movements has emboldened politicians seeking to enshrine anti-environmental agendas within national legislation.

Social Undercurrents

To dismiss the Wise Use movement as simply a creation of corporate public relations, however, is to overlook some disturbing social, political and cultural undercurrents in the United States. Political scientists Ralph Maughan and Douglas Nilson conclude:

"the Wise Use movement is a desperate effort to defend the hegemony of the cultural and economic values of the agricultural and extractive industries of the rural West. It differs from past such movements in its level of desperation and in a first effort to win allies in other parts of the region and nation".²⁷

Ideas of freedom and independence in the US are often associated with radical individualism rather than a cooperative ethic. This is especially true in what used to be the Western frontier.³¹ Although the majority of people in California, Oregon, Washington, Utah, Nevada, Colorado and Arizona now live in urban and metropolitan areas rather than in the open spaces of the "Wild West" and work in the manufacturing, trade, tourism, education, high-tech industries or in military and government service, the myth of Western individualism is very much alive and readily manipulated toward reactionary ends. Further, widespread distrust of government bureaucracy shared by people across the political spectrum can be manipulated to benefit elite interests, especially in the absence of visible anti-corporate movements.

• **The US ethic of taming the wilderness**

The westward expansion of the United States was fueled by the myth that it was the nation's "Manifest Destiny" to conquer what was viewed as a vast, empty wilderness. This worldview rationalized the extermination of native peoples, destruction of forests and harnessing of water resources, all with the full cooperation, encouragement and massive material assistance of the national government. Despite this reliance on government aid, Western ranchers have often viewed themselves alone as the true stewards of the land. With a majority of US voters now identified as suburban dwellers, many people are accustomed to a synthetic, manicured world which they still view as theirs to tame and control. The strong productivist strand in US culture was critical in the emergence of the US labour movement between the 1890s and 1930s, but has also repeatedly helped fuel distinctly right-wing varieties of populism.³²

Several of these factors are similar to those that unite right-wing and neo-fascist movements throughout the industrialized world today, while many are unique to the United States. Many voices in the US environmental movement have acknowledged that nothing short

of a wholehearted return to grassroots community activism tackling social and environmental justice issues can begin to regain the political momentum environmentalists appear to have surrendered in recent years.³³ However, it remains to be seen how such voices can counter the well-funded, highly-orchestrated campaigns of the Wise Use movement and its powerful corporate allies.

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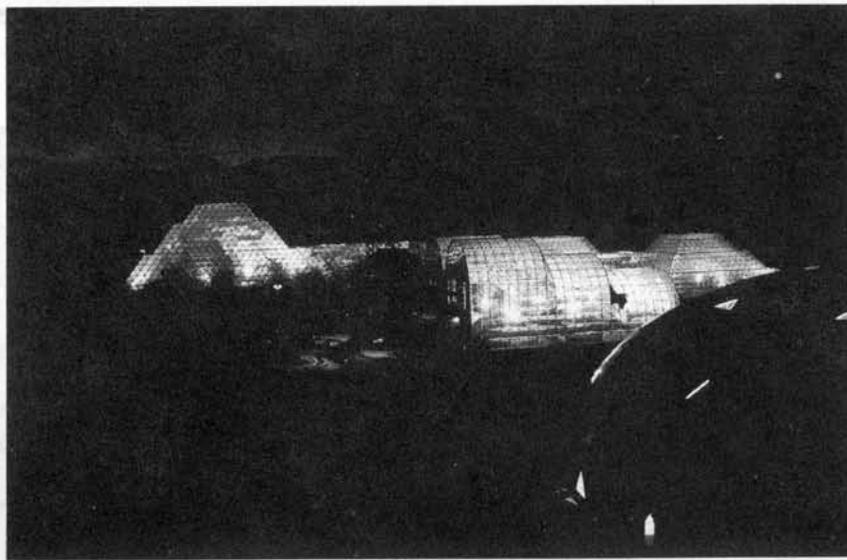
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Reproducing Planet Earth?

The Hubris of Biosphere 2

by

Timothy W. Luke

Biosphere 2 attempts to "reproduce" a miniature planet earth within a vast greenhouse in the Arizona desert. To its advocates, it signals a new stage in human evolution. Impressive though its achievements are, however, Biosphere 2 is a monument to scientific hubris. Far from replicating Nature, it has engineered a Denatured space. As such, it offers a glimpse of where "environmental management" might lead if "sustainability" is viewed as a purely technical problem.

Simultaneously suggesting visions of a NASA moon base, a counterculture commune, a Mesopotamian ziggurat, a climatronic greenhouse, a Mayan ruin and a sci-fi hideout, Biosphere 2 is a striking edifice. A vast, tetrahedral, tightly-sealed, glass superstructure covering three acres of the Arizona desert, it contains the largest, fully-closed "environmental system" on earth. Within it are housed around 3,800 species of plants and animals (and sometimes up to eight humans) in simulations of seven "basic biomes" — marsh, savannah, tropical rain forest, desert, a 25-foot-deep ocean and coral reef, intensive agriculture and human habitat — of Biosphere 1, the earth.¹

To its admirers, Biosphere 2 represents more than "the first tentative reproducing of planet earth as a biological identity". It signals a new stage in

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evolution, with biospheres being likened to new biological organisms. As science writer Dorion Sagan puts it:

"Whereas earlier there was reproduction of cells and multicellular collections of cells in the form of individual bacteria, protoctists, fungi, plants and animals, with the advent of biospheres we now see the first reproduction of ecosystemic enclaves as discrete, semi-independent units. This represents something new not only in the limited realm of greenhouses and human technology but also in the larger domain of the Earth's history (as a living being)."²

Biospheres, Sagan continues, bring closer the dream of settling the oceans or colonizing space. Indeed, in "the highly populated, polluted world of the future", biospheres may offer the only hope of human survival, their production "mandated by the pollution of the global commons". Biospheres will cease to be "isolated academic and experimental

laboratories" and will become oases for survival. The earth will become "a multiform copy of itself, not because a few people desire it but because we have no choice . . . Originally a luxury, biosphere-building eventually becomes obligatory." Sagan goes on:

"Regardless of whether Biosphere II [succeeds, it emphasizes] that we dwell in an unprecedented time within Earth history. We are presently watching the travail and pangs of a planet struggling to give birth. We now appear not above life but within it as biospheric midwives — aiding in the gestation, delivery and the development of the living planet as a whole."³

Although others are more sceptical, critics of the project — both from within the scientific community and among the general project — have tended so far to focus on the project's lack of scientific rigour, replicability or robustness. Neither the aims of the project nor its claims to

The Origins of Biosphere 2

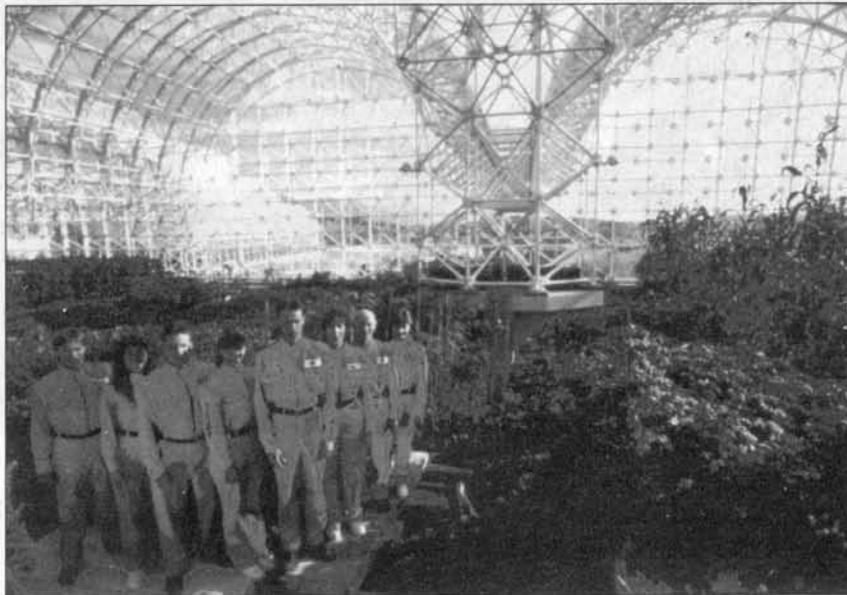
The Biosphere 2 project was started in 1983 by the Decisions Team, a group of eight people who had been working together since 1974 on different assignments under the auspices of the Institute for Ecotechnics.

One of the members of the group, Ed P. Bass, was a billionaire Texan with his own venture capital firm, Decisions Investment, and proposed a joint venture between his company and the Decisions Team to be called Space

Biospheres Ventures (SBV). Bass became Chair of the Board while other members of the Team filled other posts.

SBV found a location 25 miles north of Tucson in southern Arizona, near the small mountain town of Oracle. The Sunspace Ranch, as the Decisions Team dubbed the facility, encompassed over 2,000 acres in the foothills of the Santa Catalina Mountains and had excellent conference and accommodation facilities because it had been the Motorola Corporation's Executive Training Centre. SBV moved onto the grounds in July 1984, and began designing a small-scale module to test all of Biosphere 2's major structural components and life-support science systems. Experiments on the test module ran from January 1987 through 1989. To design the full-scale Biosphere 2, SBV also retained the services of many ecological, engineering and environmental management experts from the University of Arizona, the Marine Systems Laboratory at the Smithsonian Institution, Kew Gardens in Britain and the University of Hawai'i.

In September 1991, four men and four women went into the superstructure and Biosphere 2 was sealed up. Over the following 24 months, the "Biospherians" lived at the top of its foodchains and tended its technospheric infrastructures to test the viability of Biosphere 2. From the outset, however, the experiment was plagued by minor mishaps. Although the intention had been to keep the eight people sealed up for two years without interruption, Biosphere 2 had to be opened up almost immediately to respond to an emergency surgery case and replace some supplies. An unusually cool and cloudy winter in Arizona limited the productivity of Biosphere 2's food systems, forcing the Biospherians to go hungry and lose weight. The intention of collecting data on how species interact with each other and with the soil, atmosphere and ocean was thwarted because "it took virtually all [the Biospherians'] waking hours to feed themselves and keep their environment in order". Because of a build-up of carbon dioxide, some animal species died off completely (for example, all the honey bees); ultimately oxygen had to be pumped into the structure and a chemical scrubber installed to clean the air of excess carbon dioxide, although the designers had



The eight "Biospherians" inside Biosphere 2 just before it was sealed in September 1991 for two years.

maintained that the system would balance itself.

Nonetheless, in September 1993, the Biospherians emerged, declaring the experiment a success, and in March 1994, another crew of seven people went into Biosphere 2 to carry out more tests and experiments intended to secure the troubling loose ends exposed by the first mission. New plant species were introduced to soak up some of the carbon dioxide, while to boost the food supply,

shade-tolerant crops like bananas, cassava and taro were planted and toads and geckos introduced to control pests.

But the problems of the first experiment had created such friction among Biosphere 2's managers that, in April 1994, Bass forced out most of the Decisions Team and installed as SBV's chief executive officer a Harvard Business School graduate, Stephen K. Bannon, who was a manager of "knowledge-based companies". Bannon brought in as Biosphere 2's science director in August 1994 Bruno D. V. Marino from Harvard University's Department of Earth and Planetary Sciences.

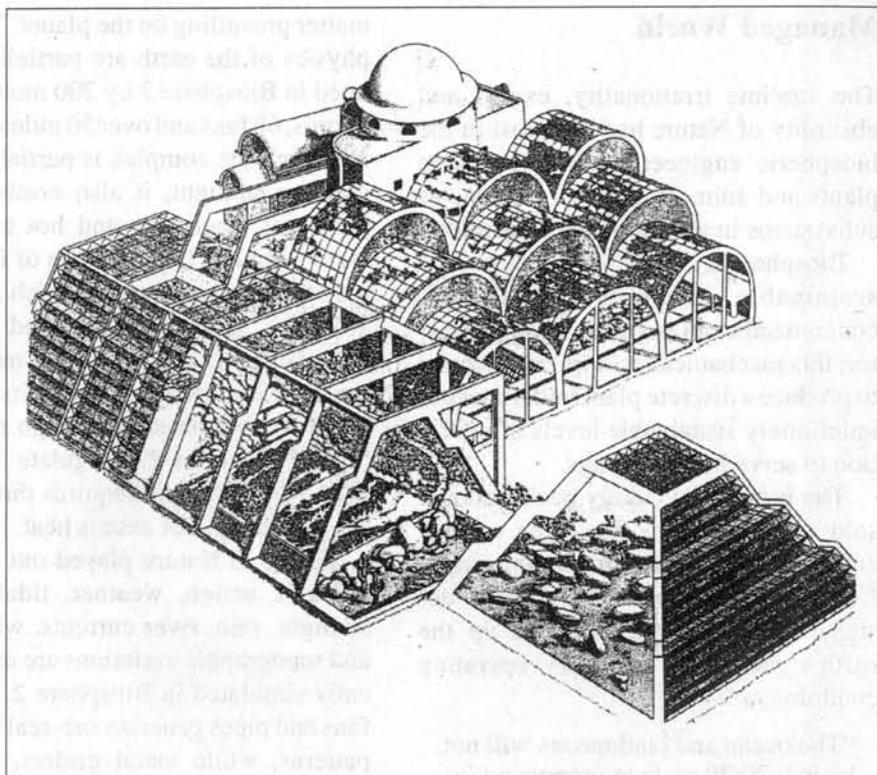
Marino and several other researchers began to review the scientific potential of Biosphere 2's enclosed ecosystem, a change in focus underscored by the abrupt cessation of the second mission on 17 September 1994 when the seven crew members emerged from the Biosphere. It has been concluded that there is little to be gained from assigning researchers to permanent residence inside the Biosphere 2 structure. Consequently, people have been making only day trips inside and all the domestic animals have been removed.

Bass, Bannon and Marino have now linked up with Columbia University's Lamont-Doherty Earth Observatory in a non-profit research consortium to stress professional standards of scientific research with rigorous peer review, outside funding ties and a role for university research personnel in defining its mission. To accommodate more research, Biosphere 2 has been opened up to outside scientists. A year-long study to understand how the undisturbed ecosystem of Biosphere 2 behaves has been proposed, followed by "manipulation of some of the parameters" such as atmospheric gas concentrations, humidity and temperature to see how the ecosystem responds.

Despite disputes over the science to be pursued through Biosphere 2, commercial interests have always driven the experiment. The emulations of the earth's ecology have been aimed at generating marketable pollution control and environmental management technologies, and at selling a small space life system to the US space programme at NASA to launch into the earth's orbit. These twin markets are still key targets for Space Biospheres Ventures.

In the north pyramid, the rain forest flows into the ocean and savannah biomes and the fresh and salt water marshes. These zones blend into the thorn scrub and desert areas in the south pyramid. The two pyramids are connected via a smaller, pyramid-arrayed hall linked to another hall which is topped by three arched vaults; these in turn blend into three squat domed turrets and a short dome-capped tower. The arched vaults contain the intensive agriculture biome while the human habitat occupies the turrets and tower — a simulated micro-city.

The visible architecture of Biosphere 2 hides most of the mechanical infrastructure such as pumps, motors, fans and piping needed to operate the closed environmental system. Mostly housed in the basement, these components sustain air chambers, composters, water tanks, dryers, condensation chambers and controllers used to keep air and water moving, plants and animals alive, and temperature and humidity constant.



Christie Lyons

“reproduce Planet Earth” are questioned.

Impressive as Biosphere 2 undoubtedly is, it is a monument to scientific hubris. Far from replicating nature, it has engineered a denatured space where fragments of nature are shackled as slave mechanisms for the benefit of humans. A totally managed environment, it offers a glimpse of where “sustainable development” might lead if “sustainability” is viewed as a purely technical and managerial problem.

A Sub-real Earth

To simulate Nature, Space Biospheres Ventures (SBV), the private company which built and manages the project (see Box, p.158) has chosen to fabricate an essentially new synthetic ecosystem by mixing and matching various components — soils, plants and animals — from a wide range of naturally-occurring ecosystems. The biomes appear to be “real”, but are actually broadly or impressionistically modelled on vaguely conceptualized geographic regions, such as the Brazilian rainforest, Chilean coastal deserts, or African savannah — nation-state and continental referents being fused with ecological life zone labels to identify certain environments. Plants and animals have been harvested from all over the earth, transported through Tucson International Airport, released into Biosphere 2 and arrayed in artificial combinations which occur nowhere in Nature

supposedly in order to emulate real ecosystems.

The plant and animal actors which Biosphere 2’s planners chose to pull into their model were selected not on the basis of their *actual* occurrence in nature but on their *potential* ecological performance. Instead of all plant and animal life, only those species which are deemed essential to the reproduction of human life or integral to the energy conversion processes (such as absorbers of carbon dioxide) are deployed. Thus all the biomes mechanically reproduced in Biosphere 2 are in effect “bionic engines”, designed to produce particular outputs at some level of “sustainable yield” so as to fulfil the biodynamic requirements of artificial ecological models.

Not surprisingly, Biosphere 2 lacks millions and millions of species from the earth’s biosphere. The ocean, for example, simulates only the high biomass, high light, shallow ocean waters near coral reefs and coastal lagoons; it ignores low light, low-biomass deep-water and mid-ocean marine regions, omits big predators and marine mammals and overlooks arctic marine environments entirely. It features artificially-generated waves and industrially-scrubbed waters to modulate algae populations. Edible crabs, mussels, clams and lobsters are combined with a sub-real coral reef, fabricated out of life forms from Caribbean and Gulf of Mexico waters. Pump-driven tides lap into a marsh estuary modelled

on Florida’s Everglades where black and white mangroves mediate water flows between the ocean and a fresh water pond.

The tropical rainforest, modelled after Amazonia, combines species of animals and plants taken from all over the Amazon and Orinoco rainforests. The savannah biome brings together grasses, shrubs and trees from Africa, South America and Australia, while the desert biome integrates flora from Namibia, Baja California, Chile and Southern Arabia. Birds, insects, fish, amphibians, bats and reptiles have been taken from all over the planet to fill various ecological niches in this designer collage of plants, soils and waters.

The intensive agriculture biome musters a fish-rice-azolla aquaculture zone; a small goat, pig and chicken ranch; a tiny herb garden; a miniaturized fruit orchard; a legume and tuber plot; and a diverse grain farm in 18 fields. Rotating through three crops a year, this zone supposedly mimics subtropical regions with high humidity and temperate ranges from 65°F winter lows to 85°F summer highs. In fact, there is no direct analogue of this agricultural region anywhere in the world. Instead, the mix of foods represents the flow of products made available by global food commerce; this biome emulates, through intensive on-site production, what the average suburban consumer can feed on after extensive car trips to the supermarket in a US or European city.

Managed World

The sublime irrationality, excess and absurdity of Nature has been lost in the biospheric engineer's plans to assign plants and animals to new functions as subsystems in an ecotechnics equation.

Biosphere 2 is thus the apotheosis of sustainable development ideology; concretized as an environmental generator, this mechanical ecology is designed to produce a discrete planetoidal space at indefinitely sustainable levels of operation to serve human beings.

The industrial ecology packaged and sold at Biosphere 2 has been reverse engineered to obtain maximum output from minimum input. For instance, designers have aspired to speed up the earth's prevailing planetary operating conditions:

"The ocean and landmasses will not be in a 70:30 surface proportion [as on the earth], but rather a 8:92 proportion. However, the ocean in Biosphere 2 will operate at least at 10 times the average productivity of Biosphere 1's oceans while the land will operate at about four times the average productivity of comparable tropical terrestrial ecosystems in Biosphere 1."⁴

The proportions of all live biomass to overall carbon dioxide in Biosphere 2 will be 6,000 times greater than in Biosphere 1, leading to "much more rapid carbon dioxide cycling by the system — from a period of about eight years in Biosphere 1 to half a day in Biosphere 2."⁵

Ecological productivity rather than autochthonous evolutionary "happenstance" rest at the core of Biosphere 2's environments. Nothing just "exists" in Biosphere 2 — contrary to what one might see or expect in Nature. There is no wilderness, no arctic, no emptiness and no fallow in Biosphere 2; they are not functional to this articulation of Space-ship Earth. Biospheric technologies have no place for tiger sharks, grizzly bears, house flies, army ants, Bermuda grass or Russian thistles. Biosphere 2 is a designer planet, drawn up to omit the pests and weeds its inventors decree to be dispensable.

Technosphere as Ecosphere

Biosphere 2's attempts to reproduce the earth's ecological relationships also reverse the relations of energy and

matter prevailing on the planet. The biophysics of the earth are partially simulated in Biosphere 2 by 200 motors, 120 pumps, 60 fans and over 50 miles of pipe. Although the complex is partially powered by sunlight, it also needs steady inputs of electricity and hot and cold water supplies from outside of its internal loops, energy inputs which are provided by natural gas-powered generators. To stabilize its artificial metabolic systems, Biosphere 2 needs its atmosphere to be processed through two vast "lung" structures that regulate its internal air pressure and requires three cooling towers to vent excess heat.

Forces in Nature played out through volcanic action, weather, tidal flows, sunlight, rain, river currents, wind, fire and topographic variations are mechanically simulated in Biosphere 2. Pumps, fans and pipes generate sub-real weather patterns, while metal girders, sprayed concrete and steel plate recreate rock formations, hillsides and bedrock foundations. A glazed frame mimics atmosphere to provide breathable air, composters generate tillable soil, and gas fired turbines produce electrical power and climate control.

The biomes of this biosphere, unlike those of the earth, are rigidly homogenized, stabilized and centralized. Everything is monitored by central computers fed with endless streams of information from remote sensors. There are not supposed to be any discontinuities or disruptions in this planetary emulation; everything is directed along specially pre-selected tracks. Whereas the WorldWatch Institute "watches" the earth, Biosphere 2 fabricates its own little world under glass to develop regulatory mechanisms in accord with prevalent concerns of environmental stability and security.

Scientific Surveillance

Despite its naturalistic emulations, Biosphere 2 is an essentially industrial apparatus, integrating machinery, computers, chemicals, plants, animals and soils into a closely-coupled, cybernetic mechanism. "Nature" has been digitally sampled, botanically colourized, zoologically compressed and ecologically scanned into a biospheric simulation of itself that could not and would not exist without an engineering infrastructure.

As a result, the earth's environment

becomes simply "a biological life support system" whose internal mechanisms can be reduced to bioregenerative technologies. In the earth's biosphere, people rarely think about the biophysical inputs they take every day. When the earth is viewed as a biological life support system, however, humans are reduced to machines, requiring precisely calculated inputs:

"approximately 0.6 Kg food, 0.9 Kg of drinking water, 2.3 Kg of sanitary water and 16 Kg of domestic water for a total of 22 Kg per day, or some 45-50 pounds are required to provide life support for each person per every day in an artificial life support system. Thus, in the course of a year, the average person consumes three times his body weight in food, four times his weight in oxygen, and eight times his weight in drinking water".⁶

With such calculations, a human being's biophysical requirements and the Earth's biophysical capacities are reduced to differentiable but integral functions. Caught in the grids of scientific surveillance, the ecological interface of human organisms and biological environments are transformed into technological design criteria either "to sustain human life in space on a permanent and evolving basis" or to exploit "the commercial opportunities and historic importance for such spin-offs" in bioregenerative technologies.⁷

The Commodification of Ecology

Indeed, the aspiration of Biosphere 2 is not to reproduce the environment but to rationalize the commodification of environments. Biosphere 2's version of ecology seems intent upon selling people a product that they once had for free. Fresh air, clean water and green grass, Biosphere 2 suggests, will be soon either a memory or a corporate-produced analogue. (Ironically, a more rational use of "biospheric envelopes" like Biosphere 2 might be to contain toxic micro-environments produced by industry.)

Biosphere 2 redesigns what is assumed to be the original planet earth into a new, artificial world. But Biosphere 1 is no longer what might be identified as Biosphere 0 — the earth prior to humans' evolutionary emergence. The anthropogenic reengineering of the earth's biosphere carried out over centuries is, in fact, embedded in the fully-enclosed ecosphere of Biosphere 2.

A Strange Kind of Eco-Tourism

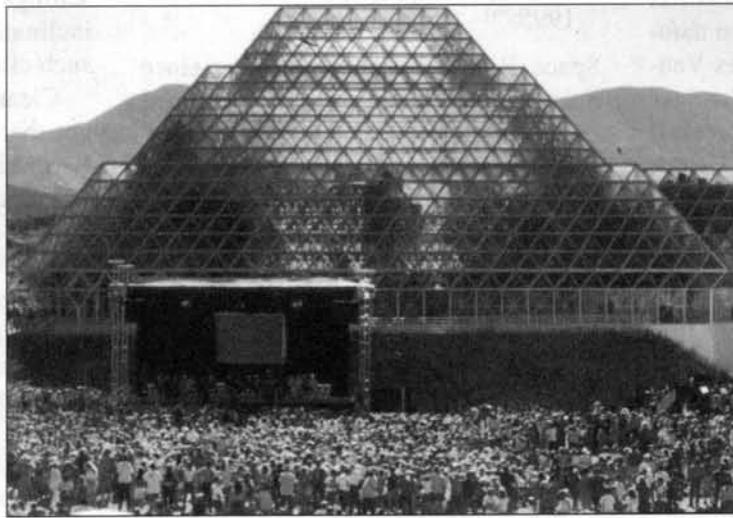
Besides being a scientific enterprise, Biosphere 2 operates as an uneasy amalgam of environmental theme park, roadside tourist attraction and biological science museum. Only two sources of funding keep the gates open: Ed Bass, Biosphere 2's original multibillionaire patron from Texas, and "the visiting public".

The entire facility is obviously designed around attracting, entertaining and moving large groups of visitors. The daily flow of people in and out of the facility is designed, like Disneyland, to keep them running past the cash registers at the project's numerous gift shops and eating establishments after they have paid their admission fees. Visitors can go to the Education Resource Center "to peruse and purchase a variety of books, CDs and other science education products", the Biosphere Gift Shop "featuring apparel, accessories, books and videos", and the Ocean Gift Shop "with sculptures, books, videos, accessories and specially designed wearables".

Like Disneyland, Biosphere 2 constantly sells not only entertainment and education, but also itself in curio souvenir form: T-shirts, baseball caps, key rings, books, videos, posters, tote bags, car mugs, ballpoint pens all carry the Biosphere 2 logo out into the world as advertising at the consumer's expense.

As a result, Biosphere 2 has been more an exercise in eco-tourist infotainment than a solid exposure to science education. The environmental education centre ignores the unique local bio-region in its ecological lessons, which focus instead upon how humanity might rework the global ecosystem as a biophysical apparatus to serve new technological ends.

While it is a science museum of sorts, most of the science is bioengineering-oriented, stressing the design and management of the Biosphere 2 complex as bionic



Vo Trung-Dung/Science Photo Library

mechanisms. Much of the instruction attempts to evangelize the public into accepting the notion of such synthetic environments as acceptable sites for human habitation.

As an educational eco-tourism destination, Biosphere 2 does not imitate the Smithsonian Institution in Washington or the Museum of Natural History in Chicago. Instead, it has a much closer model from its immediate locality: Old Tucson. A creature of the

Hollywood film industry, Old Tucson, with its simulations of the Old West, is not quite historically accurate or anthropologically verifiable. But it does conform to the celluloid images of the Old West. As at Old Tucson, one buys a ticket at Biosphere 2 to be transported into another time and place — somewhere long ago, far away or way off in the future — to see oddly costumed players acting out a fantasy script to inform and entertain audiences.

After the managerial shake-up of 1994, Bass and his new management team promised to reinvent the tourist experience of Biosphere 2. Space Biospheres Ventures will remain in the business of commercializing environmental technology, like the atmospheric sensors it uses in Biosphere 2 to monitor atmospheric gases, but tone down the Disneyland style tours, since the presentation of Hollywood "science" and New Age philosophies of Gaia-consciousness in an infotainment package seriously undermined its scientific credibility.

Seeing this packaging as part of the project's image problems, science director Bannon claimed that "the tour has been rescripted to go back to science". Yet visitors to the facility in August 1994 saw essentially the same show and heard basically the same presentations that had been made during August 1993, while in August 1995, the "shift to science" programme still highlighted the heroics of the two Biospheric missions.

The conceit of Biosphere 2 is that it is an exact copy of supposedly raw Nature from Biosphere 1. Ironically, it is — but not in the ways that its designers believe. Nature is being so intensively exploited in the economies of transnational corporate capitalist society that "the environment" is becoming a Denature. It is this space of surveillance, management and production which is now the earth's biosphere that Biosphere 2 is trying to imitate. Even organizations such as the Nature Conservancy and the World Wildlife Fund, though they will not state it in these terms, admit that capitalism is denuding the planet of enormous numbers of species and micro-ecosystems that its

market exchanges cannot colonize for profit — and even many of those that it can. To produce beef, corn, wheat, pork, rice, chicken, rye, mutton, cassava, fish or oats, most other plants and animals in the spaces needed for these foodstock systems are declared to be weeds or pests, to be eradicated in the name of the "sustainable development" of commodities. Such synthetic environments, in turn, constitute, ironically, "the natural ecologies" that many of today's environmentalists struggle to preserve.

While Space Biospheres Ventures suggests that its expertise might be put to use by refining human environmental impact on the earth, the so-called "solu-

tions" tested in Biosphere 2 would increasingly efface Nature's varied diversity with instrumentally rational, replicant ecosystems pitched exclusively to serve their human hosts.

Biosphere 2 is not a replication of the earth's biosphere. Its basic ecology is essentially cybermechanistic, simulating the now increasingly denatured Nature of earth inside an ecological formation in which humans, computers, mechanisms and biomasses become one interdependent, co-evolutionary energy generation and conversion circuit. Biosphere 2's architectural complex, in fact, closely emulates the cyborg planet earth being constructed by transnational capitalism.

Biosphere 2 is thus an elaborate technology devoted to materializing anthropocentric and anthropogenic change on an ecosystemic scale. It is not an enterprise devoted to Nature or even to naturalism, because Space Biospheres Ventures aim is to improve on "under-productive" and "inefficient" Nature. Just as DuPont and nineteenth century capitalism brought humans better living through chemistry in the twentieth century, SBV and twentieth century capitalism promise humanity better living through biospherics in the twenty-first century.

Corporate Ecology

Space Biospheres Ventures is well-aware of the commercial potential of Biosphere 2's technological spin-offs in pollution control, hazardous waste mitigation and rationalized waste management. As John Allen, one of Biosphere 2's founders, says in his book, *Biosphere 2: The Human Experiment*:

"Venture capital was raised on the assumption that marketable technology would be developed, which would offer practical solutions to specific problems of pollution control and environmental management on earth. The Biosphere 2 project would be not just a matter of science and technology, important as they were, but also one of appropriate finance, management, and product development."⁸

SBV environmental engineers have adapted bioregenerative systems into domestic air-handling systems, creating one possible version of "Nature's answer to earth's environmental pollution problems."⁹ Likewise, architects have sketched designs for model "Bio Homes" to create closed water, air and sewage recycling systems inside single-family houses to improve air quality, enhance water quality and produce edible biomass.¹⁰ Admission to these projects would come at a price; not just anyone would be admitted.

There are, in addition, other settings — in the polar regions, amidst vast deserts, under the sea or ultimately in extraterrestrial space colonies — where biospheric systems might one day be in demand. Allen relates how:

"In 1984, NASA . . . called for Space Station Freedom to be in orbit in 1992. Space Biospheres Ventures

drove to get Biosphere 2 built and into operation by that date, anticipating the possibility of putting the first, small space life system into orbit by 1995."¹¹

Space Biospheres Ventures has since openly touted biospherics as the means by which humans can attain their extraterrestrial destiny. The biospherians of Biosphere 2 see themselves as Biosphere 1's best opportunity to "birth offspring that can escape to other stars."¹² Some of Biosphere 2's consulting designers believe that:

"Biospherics opens up, together with astronautics, the ecotechnical possibilities, even the historic imperative, to expand earth life into the solar system and beyond that to the stars . . . Biosphere 2 will provide the first model and the data . . . that will allow the successful building and operation of the Mars settlement."¹³

Biospherics provides a path to realize that:

"part of human potential [which] is to serve as steward to the biosphere here on earth, and to assist its spread and evolution through space."¹⁴

Rather than serving as an aid to the stewards of the biosphere on earth, however, biospherics has picked and pulled bits and pieces from earth's many diverse biomes into synthetic simulations of terrestrial biophysics, reducing them to nothing but bioregenerative life support systems for colonizing the Moon, Mars, various asteroids or other cosmic sites beyond the solar system.

A Dubious Milestone

From its inception, Biosphere 2 has been a confused tangle of duplicities. Organized as a scientific simulation of the earth, it has operated mainly as another roadside attraction in the greater Tucson area leisure industry (see Box, p.161). Supposedly designed to be a credible scientific project, it has mostly functioned as a media event and technoscience soap opera. Funded initially as a private venture capital exercise to the tune of \$150 million, it openly survived by huckstering other products to the consuming public — science shows, motel facilities, restaurant meals, T-shirts — in order to keep its doors open.

Biosphere 2's version of ecology thus reifies and commodifies environments into "pay-as-you-go" experiences in which ecological benefits are captured

and contained under glass. Access to these comparatively simple, but nonetheless still environmentally wholesome, settings can be sold to those with the inclination and resources to reside in such climate-controlled spaces.

Clearly, the ecology of Biosphere 2 is not that envisioned by the Sierra Club, Earth First!, the Nature Conservancy or Greenpeace. Instead, it provides a disciplinary space to invent a new science — "biospherics" — to engineer artificial simulations of terrestrial ecologies in extra-terrestrial, non-terrestrial or even harsh terrestrial settings where there are new "possibilities for creating new spheres of life as well as preserving and enhancing the potentiality of the biosphere of the earth."¹⁵ Biosphere 2 should not be mistaken for an environmentalistic enterprise dedicated to restoring some inner balance to life on earth as it might have been prior to, or would be apart from, the workings of contemporary transnational capitalism. Designing, constructing and operating a fully enclosed, air-tight ecological system on three acres of land is a remarkable engineering achievement — but it is a very dubious environmental milestone.

Notes and References

1. A biome is a biological subdivision reflecting the ecological and physiognomic character of vegetation. Biomes are the largest geographical communities of plants and animals that are convenient for ecologists to recognize and broadly correspond with climate regions throughout the world. They can be considered as equivalent to the concept of major plant formations in plant ecology, but are defined in terms of all living organisms and of their interaction with the environment, not only with the dominant vegetation type. Distinctive biomes are recognized for all the major climatic regions of the world, emphasizing the adaptation of living organisms to their environment, such as the tropical rainforest biome, desert biome and tundra biome.
2. Sagan, D., "Gaia and Biospheres" in Bunyard, P., and Goldsmith, E., *Gaia: The Thesis, The Mechanisms and The Implications*, Wadebridge Ecological Centre, Cornwall, 1988, pp.237-242.
3. Ibid.
4. Allen, J. and Nelson, M., *Space Biospheres*, Synergetic Press, Oracle, Arizona, 1989, p.58.
5. Ibid.
6. Nelson, M. and Soffen, G., *Biological Life Support Systems*, Synergetic Press, Oracle, Arizona, 1990, p.vii.
7. Ibid., pp.vii-viii.
8. Allen, J., *Biosphere 2: The Human Experiment*, Penquin, New York, 1991, p.3.
9. Nelson, M. and Soffen, G., op. cit. 6.
10. Ibid.
11. Allen, J., op. cit. 8., p.3.
12. Allen, J. and Nelson, M., op. cit. 4., p.40.
13. Ibid., p.75.
14. Ibid., p.52.
15. Ibid., p.ii.



To Coldly Go . . .

GENDER ON ICE: American Ideologies of Polar Expeditions by Lisa Bloom, University of Minnesota Press, 1993, \$14.95/£11.95 (pb) 163pp. ISBN 0-8166-2093-8.

FARTHEST NORTH: A History of North Polar Exploration in Eye-Witness Accounts, edited by Clive Holland, Robinson Publishing, London and Carroll & Graf, New York, 1994, £16.99/\$23.00 (hb) 320pp. ISBN 1-85487-282-6.

If the romance of heroism forged in formidable places such as the Arctic captures your imagination, you won't like *Gender on Ice*. The main object of Lisa Bloom's critique, even scorn, is Robert Peary, the US explorer who claimed in 1909 to be the first person to reach the North Pole.

Peary's claim to have reached the Pole is just one part of the Peary legend which has been revealed as fraudulent — although he may have come close. But Bloom is less interested in de-frocking Peary for these failings than in "deconstructing" the cultural relevance of polar exploration in general and the Peary expedition in particular.

The mainstream convention of Arctic narrative portrays explorers as lone superheroes, bravely facing hardship and deprivation in forsaken lands in pursuit of a greater good — the disinterested advance of scientific knowledge or national glory or bringing savage geographies into the orbit of the civilized world.

In contrast, Bloom's central argument is that polar exploration in the late nineteenth and early twentieth centuries was integral to the social construction of a

distinctive nexus of masculinity and nationalism, one which centrally depended on the exclusion of women. Polar exploration reified a particular form of masculinity. For US Americans, Peary was the epitome of the "new cult of full-blooded manliness [inspired] by Theodore Roosevelt". In the turn-of-the-century United States, with the closing of the frontier of the American West, the Arctic represented one of the few remaining masculine testing grounds where "adventure and hardship could still be faced". Bloom argues further that Peary's expedition to the North Pole propelled US nation-building:

"Peary's interest in planting Old Glory [the US flag] on each pole occurred at a historical moment when the US had begun to compete with Europe's empire-building activities."

It was partly through polar exploration, Bloom argues, that the US became a member of the "big boys" club of nations.

Women had no role in this vehicle for nation- and culture-building and the advance of scientific knowledge. The masculinization of polar exploration not only reflected prevailing presumptions about gender roles, but it also served to advance and modernize the exclusion of women from spheres of cultural and political power. Recent studies by feminist geographers, among others, underscores the extent to which the masculinization of power and authority depends on the control of boundaries, space and geographies: keeping women out of certain places is, literally, a way of keeping women "in their place".

Peary's expedition was funded and endorsed by the US National Geographic society, which was largely responsible for transforming Peary's story into the heroic fantasy that endures today. Bloom argues that the Society, through its widely-circulated magazine, *National Geographic*, appropriated and popularized the idea of heroism as a white, masculine, nationalistic enterprise.

Bloom's real interest, in fact, seems to be the Society and the cultural "text" it represents, not polar exploration *per se*. Indeed, a peculiar feature about *Gender on Ice* is that the reader does not learn much about polar exploration. Bloom is a cultural studies scholar, and is more interested in the *representation* of polar exploration than exploration itself.

Bloom's setting polar exploration in context, however, is a welcome correc-

tive to the self-aggrandizement of much exploration literature. *Gender on Ice* contributes to the growing interest in constructing and writing "alternative" histories of travel and exploration, and in explaining the relationship of these to imperialism, nationalism, colonialism and the globalization of Euro-American masculine standards and values. Moreover, *Gender on Ice* is one of the few feminist, cultural critiques available on polar exploration; critical narratives of conquest and exploration of Africa and Asia, for example, are more widely available.

Nonetheless, *Gender on Ice* is a frustrating book. It sweeps from the North Pole to Africa in pursuit of "discourses of representation"; from Peary in the Arctic to a brief tour through Scott's British Antarctic expedition (which seems odd in a book about US North Polar exploration); from an examination of the role of science in exploration to that of writing; from the imagery of the Arctic indigenous peoples to scant paragraphs on the role of Peary's wife in his Arctic trips. All are interesting, but leaving most readers wanting something rather more substantial.

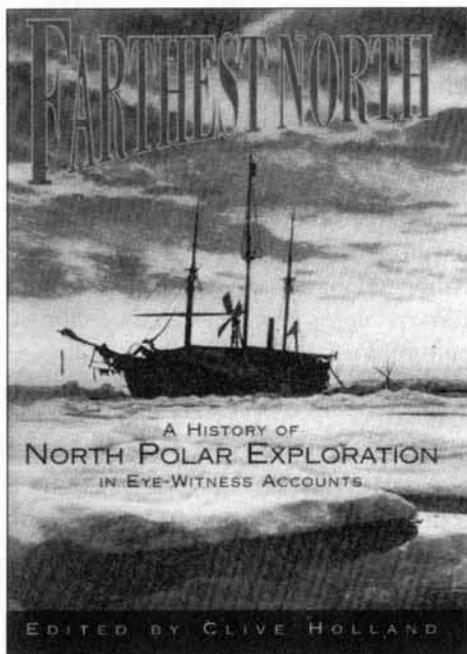
If *Gender on Ice* offers more critique than content, it is the other way around with *Farthest North*. Clive Holland, a former archivist at the British Scott Polar Research Institute in Cambridge, has compiled excerpts from the diaries, journals and memoirs of "all the best-known explorers" of the Arctic over the past four centuries. He frames each of the explorers' narratives with accompanying text, laying out the history, context and temper of the times.

Holland is not entirely uncritical of his explorers. He acknowledges, for example, that Peary was:

"so single-mindedly determined to fill his own chosen destiny that he was prepared to humiliate his subordinates, virtually enslave an entire band of Eskimos, and he harboured a consuming hatred for anyone he considered a rival".

He concludes, however, that although "Peary was not a particularly agreeable man . . . he was a man of truly heroic stature". Indeed, although Holland evokes a pantheon of Polar greats and finds some of them flawed and many more foolhardy, he still stands firmly in admiration of the enterprise and spirit that Bloom finds so objectionable.

Holland is intrigued with the question of why the quest to reach the North Pole



has consumed so many men: as he says, "it is a strange target for an explorer to aim at, for there is nothing there". His chronological explanation is that the earliest explorers were motivated by commerce, pursuing a Northwest Passage which would lead European merchants straight to the Orient. By the early 1800s, this had proved to be a chimera and Arctic exploration became an official pastime of a British navy desperate to justify an oversupply of men and ships. In conjunction with these military interests, a putative scientific rationale — the disinterested search for knowledge — was constructed to justify polar exploration, the cost of which was escalating in lives and money.

Holland suggests the quest for personal aggrandizement — the creation of the heroic "great man" explorer — was a late nineteenth century phenomenon. But having identified these shifts in the ideological framework of polar exploration, Holland pursues the matter no further. Cultural explanation or even curiosity lies beyond his purview. *Farthest North* is described as "a book of adventure for all armchair travellers" — and that is precisely what Holland provides.

Most readers will probably want more substance than *Gender on Ice* and more critical analysis than *Farthest North*. My advice is to read them both at the same time.

Joni Seager

Joni Seager is a feminist geographer, author of *Earth Follies: Coming to Feminist Terms with the Global Environmental Crisis* and *The New State of the Earth Atlas*.

Move Out!

ANTHROPOLOGICAL APPROACHES TO RESETTLEMENT: Policy, Practice and Theory, edited by Michael M. Cernea and Scott E. Guggenheim, Westview Press, Boulder & Oxford, 1993, £34.50/\$47.50 (sc) 406pp. ISBN 0-8133-8102-9.

Michael Cernea and Scott Guggenheim are both World Bank employees, respectively Senior Adviser for Social Policy and Sociology, and an anthropologist in the Environment Department. This edited collection of essays is a useful addition to the literature on forced resettlement, but still reflects the arrogant and politically naive worldview prevalent even among the more progressive of those working in the development industry. Most of the 17 chapters are case studies of the social effects of forced displacement due to development projects, mostly large dams. Other chapters deal with the evolution of the World Bank's resettlement policy since 1980 (which Michael Cernea played a key role in instigating) and how it has affected the policies of governments and other development agencies.

The main disappointment with this book is its selection of authors. Besides the editors, who individually and jointly wrote several chapters, several other contributors are also World Bank employees or consultants. For example, the author of the essay on the Yacyretá Dam on the Argentina-Paraguay border was the head of the Yacyretá resettlement programme; that of the chapter on the Ghanaian Kpong Dam was a high-ranking official in the agency overseeing the dam's construction. The chapter on resettlement planning in the Brazilian Power Sector was written by a former head of the Environment Division of the Brazilian electricity utility, Eletrobras, who is currently an Environmental Specialist for the World Bank.

Not surprisingly, whilst these writers allude to the deplorable record of past resettlement schemes, they are optimistic that with the right policies, huge numbers of individuals, families and communities can be forced off their land and out of their homes without long-lasting ill effects. Wishful thinking gives way to arrogance and callousness in the short chapter by World Bank consultant Edward Schuh of the University of Minnesota. Schuh claims that displacing people and then trying to rebuild their shattered lives:

"presents a golden opportunity, since seldom do those interested in promoting economic development have an opportunity to start from the beginning".

The independent academic authors in *Anthropological Approaches To Resettlement* are noticeably less sanguine about the possibility of resettlement without suffering. In an interesting chapter on the resettlement of 10,000 Navajos because of a complicated land dispute with the Hopis in Arizona, David Aberle points out that "relocation will almost always be a tragedy of greater or lesser importance". Aberle recognizes the political economy of resettlement: "relocatees are moved from their homes because they are relatively powerless". He also casts doubt on the influential theory espoused by leading resettlement professionals that displacement can be used to improve the lot of the oustees if the rehabilitation programme is well-planned, well-funded and well-executed. Although most programmes hardly ever meet these conditions, the professionals are content to support large-scale resettlement schemes in the hope that one day perhaps they will.

The developmentalists' naivete is shown in particular in Guggenheim and Cernea's introduction, in which they describe the chapter by anthropologists N K Behura and P K Nayak as "provocative". Behura and Nayak describe how the impoverishment and trauma suffered by the 80,000 people displaced by the Rengali Dam in Orissa, India — farmers' yields fell by an average of almost 70 per cent after displacement — led to social and cultural breakdown. This was manifested in interfamily and intercommunity disputes, changed caste relationships, and a fall in the frequency and popularity of village festivals. It would surely only be "provocative" to claim that a disastrous fall in community economic well-being would *not* have profound cultural and social consequences.

An interesting final chapter by Cernea discusses the differences and similarities between the situation of refugees forced to flee war or natural disasters and that of "oustees" forced to leave their homes because of development projects. Although it has so far aroused much less international concern, the oustee problem is hardly less severe than the refugee problem in terms of numbers and of individual misery. Some 4 to 4.5 million people, according to the latest World Bank estimates, are displaced each year by large

dams alone (twice the number cited in this book), with an additional 7 million people losing their homes due to urban development and transportation. Cumulatively over the last decade, 60-70 million people have been involuntarily resettled due to these three sectors alone. Meanwhile Cernea quotes 1992 UN estimates which put the number of internal and cross-border refugees worldwide at between 38 and 42 million.

Totally absent from *Anthropological Approaches To Resettlement* are the voices of the displaced themselves. Why should the oustees not be allowed to speak? A favourite theme of the World Bank's "new thinking", as espoused in its 1994 *Resettlement and Development* review of its own projects involving involuntary resettlement, is that the "participation" of displaced people is crucial for the "success" of resettlement. Yet no displaced people were allowed to participate in this book. Even if articles written by oustees could not be found or commissioned, at least some interviews with them would have given the critical perspective of the people Edward Schuh regards as guinea pigs for the theories of sociologists and economists.

Patrick McCully

Patrick McCully is an Associate Editor of *The Ecologist* and Campaigns Director of International Rivers Network in Berkeley, California.

Green Screen & Print

THE MASS MEDIA AND ENVIRONMENTAL ISSUES, edited by Anders Hansen, Leicester University Press, 1993, £12.99 (pb) 238pp. ISBN 0-7185-144-0

The way in which we make sense of the environmental threats which face humankind is greatly conditioned by a powerful and omnipresent set of electronic and printed messages — the mass media.

For many people, knowledge of environmental issues is based upon what they have learned through print and electronic media, which help construct conceptions of political, social and ecological reality. How these mass media have contributed to the development of environmental issues as social problems is the focus of this volume.

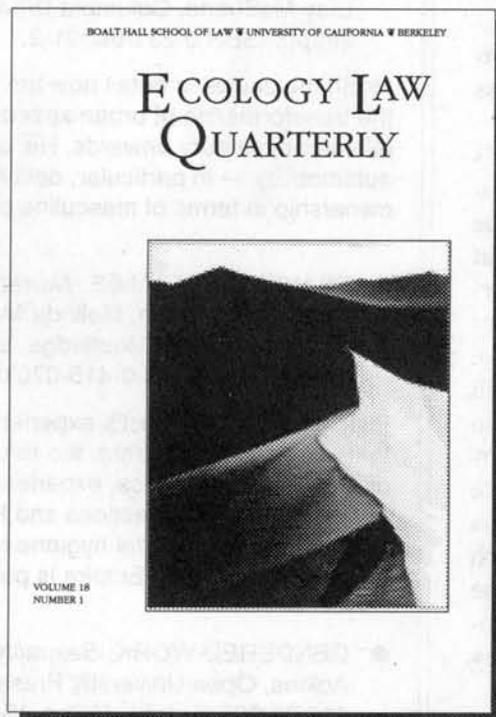
The authors, all with backgrounds in communications research and based largely in Europe and North America, seek to explain media coverage of environmental topics in terms of professional norms and journalistic strategies as well as the wider economic context in which the industry operates.

The book illustrates quite clearly that the prominence of an environmental issue in the mass media is a very poor indicator of the degree of environmental degradation which actually exists. The criterion of newsworthiness dictates which issues are covered and when; hence coverage of environmental issues can easily be displaced by the emergence of issues which more readily meet this criterion. The book does not sufficiently explore, however, the key question of how far the mass media is able to set the political agenda or how far it is merely

responding to predominant social and political concerns.

Which issues get represented and how they are "framed" relates to the ability of various actors such as government, industry, the scientific community and, of course, environmental groups to assert their agenda. It is clear that establishment access to media can be almost automatic, while outsiders such as environmental pressure groups tend to earn media attention through the performance of media stunts.

Yet organizations such as Greenpeace, once renowned for their eco-alarmism, have over time become established as legitimate sources of information on the environment. The issue of how far environmental groups should continue to focus their campaigning energies on obtaining media coverage would have been a valuable and interesting addition to the volume.



Ecology Law Quarterly provides a synthesis of legal and technical matters, and addresses the entire range of environmental questions, including such areas as:

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James Shanahan's chapter on "Television and the Cultivation of Environmental Concern" suggests that increased exposure to environmental coverage on television actually serves to reduce levels of environmental concern, cultivate alienation and stifle activism. News coverage can also imply that simple changes in behaviour and attitude are the only necessary changes required to avert ecological crisis.

The chapter on journalistic reporting strategies by Sharon Dunwoody and Robert Griffin includes some incisive analysis of regional and local newspaper coverage, an area often neglected in media studies, and the way the press interacts with different local communities.

Disappointingly, this volume fails to show how media discourse on the environment, by its treatment of environmental issues as if they were merely scientific questions divorced from social and political contexts, legitimates notions of the techno-fix and prevents a broad diffusion of ecological thinking. The need for reduced consumption and production typically goes unacknowledged by the mass media.

Also unexplained, despite the book's expressed aim of considering the economic context of the mass media, is the role that advertisers play in ensuring that more radical agendas or criticisms of corporate or government activity are not covered by the mass media. Corporate influence is not exercised only through the threat to withdraw advertising; it also creates tacit boundaries excluding coverage of issues detrimental to corporate interests which sponsor-hungry media managers are loathe to transgress. Such pressures undoubtedly help to explain the nature of mass media coverage of controversial environmental issues, and yet they are scarcely touched upon in the book.

More analysis of the sort of ideologically-loaded messages the mass media send out, and of the conventional, and in many ways anti-ecological, framework within which discussion of environmental issues is framed, would have strengthened an otherwise valuable overview. Given the range of issues covered by *The Mass Media and Environmental Issues*, the book deserves the attention of environmental activists and the public alike.

Peter Newell

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BOOKS DIGEST

- **THE CHICAGO GANGSTER THEORY OF LIFE: *Nature's Debt to Society***, by Andrew Ross, Verso, London and New York, 1994, £12.95/\$17.95 (pb) 320pp. ISBN 0-86091-654-5.

A witty yet profound analysis of how views of nature are socially constructed and of the politics that flow from such constructions. Using a wide range of examples, some of them hilarious, the book is a reminder that "Nature can be politically reassuring for anyone who wants it to be", justifying competition, cooperation or conflict, depending on one's politics. "The challenge of ecology in the years ahead is to encourage forms of social thought and action that do not mistake wisdom *about* nature for the wisdom *of* nature".

- **THE GAME OF THE ROSE: *The Third World in the Global Flower Trade***, by Niala Maharaj and Gaston Dorren, International Books, Utrecht (Jon Carpenter, Oxford), 1995, £10.99/\$17.50 (pb) 112pp. ISBN 90-6224-981-7.

In the past decade, countries in Africa, India and South America, particularly Columbia, have become major competitors in the cut flower market, often subsidized by development aid. This study shows how cheap labour, the use of scarce agricultural land and water and the drenching of workers in toxic pesticides enable the flowers and the profits to flow to the North.

- **DOWN THE ASPHALT PATH: *The Automobile and the American City***, by Clay McShane, Columbia University Press, New York, 1994, \$19.50 (pb) 288pp. ISBN 0-231-08391-2.

McShane shows in detail how the rise of the car was inextricably linked with the transformation of urban spaces across the United States from the mid-nineteenth century onwards. His analysis of "gender wars" during the rise of automobility — in particular, definitions of mechanical skill, driving and ownership in terms of masculine power — is both timely and innovative.

- **TRAVELLERS' TALES: *Narratives of Home and Displacement***, edited by George Robertson, Melinda Mash, Lisa Tickner, Jon Bird, Barry Curtis and Tim Putnam, Routledge, London and New York, 1994, £11.99/\$16.95 (pb), 255pp. ISBN 0-415-07016-3.

Investigating the tourist's experiences of travel together with those of the tourist's host, the migrant, the refugee and the exile, this collection of essays discusses travel politics, experiences of encountering the "other", and the effects of global interactions and local resistances. Anne McClintock's essay on white, male, imperial hygiene reflected in soap advertisements during the heyday of the British Empire is particularly intriguing.

- **GENDERED WORK: *Sexuality, Family and the Labour Market***, by Lisa Adkins, Open University Press, Buckingham and Bristol, PA, 1995, £12.99/\$27.50 (pb), 183pp. ISBN 0-335-19296-3.

Sexual and family relationships are usually regarded as having nothing to do with employment. By analysing women's and men's paid and unpaid work at a leisure park and a hotel, Adkins shows how in fact such relationships underpin a gendered labour market.

- **GLOBAL VILLAGE OR GLOBAL PILLAGE: *Economic Reconstruction From the Bottom Up***, by Jeremy Brecher and Tim Costello, South End Press, Boston, (Turnaround Distribution, London) 1994, £11.00/\$14.00 (pb), 237pp. ISBN 0-89608-493-0.

This book is an extremely accessible account of the process of "globalization" — how people, jobs, the environment and democracy are being affected by the way corporations, banks, and transportation and communication systems now cross national boundaries at will. It includes a practical guide to what people can do about it such as set up transnational workers's networks, press for corporate codes of conduct and campaign for environmental rights.



distribution we observe in the world today. But the way to correct for this is by attributing the poor more importance when compiling worldwide impacts, not by confronting them with unrealistically high prices for environmental goods. This is a technical point, but nevertheless important.

Impact valuation is often equated to a "do nothing" policy recommendation, mainly perhaps because William Nordhaus is one of the most prominent exponents in both these areas. Ms Wysham, too, takes this shortcut and seems to disagree with the perceived policy implication as much as with the analysis itself. In this respect, social cost studies thus share the fate of those couriers of old who were executed for bringing ill tidings. Yet Ms Wysham's interpretation in this point is quite wrong, and the message may not be entirely to her disliking. The sort of damages we (tentatively) calculated may well be sufficient to justify a fair amount of action. To my knowledge, none of the seven authors of the IPCC "social cost" chapter would, in fact, subscribe to a "do nothing" view. Some, like William Cline, are forceful advocates of stringent emission cuts. The IPCC chapter, however, is careful not to draw any policy conclusion. The purpose of the IPCC process is to review the literature, not to make policy recommendations.

Dr Samuel Fankhauser

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Daphne Wysham replies . . .

Regardless of whatever method Dr Fankhauser uses to calculate the value of lives lost due to climate change, his bottom-line calculation is this: 229,545 "extra deaths" caused by climate change as carbon dioxide doubles in the earth's atmosphere over the next 25 to 50 years.

Dr Fankhauser's response to my editorial deals with arcane "technical points" which serve only to obscure the very simple number his "review of the literature" has come up with.

This review is apparently very limited — based upon one document compiled by the US Environmental Protection Agency, which anticipates the number of lives expected to be lost . . . in the US. This document was never intended as a platform for estimating mortality due to climate change worldwide.

By reviewing the literature in such a cursory manner, and arriving at certain conclusions that vastly underestimate the number of human lives lost in a warmer world, Dr Fankhauser may believe that he is making calculations that "may well be sufficient to justify a fair amount of action." In fact, by extrapolating from data relevant to the US alone, he is doing everyone a disservice by leading policymakers to believe that climate change will be relatively cost-free to both the richer North and the poorer South.

Had he done a thorough review of the scientific literature, he would have discovered data showing mortality figures due to climate change hundreds of times greater than the EPA's. At the low end, this data predicts 135 million additional deaths due to climate change; at the high end, over one billion. Even if one were to accept the absurd value of \$10,000 per life lost in the poorer South, these higher mortality figures would drastically inflate the costs of climate change to an unacceptably high level.

Dr Fankhauser also says that "economists do not value lives. What they do estimate is people's appreciation of a risk-free environment." Buried within this seemingly simple statement is a complex series of assumptions about the relationship between people, their environment and development. This statement presumes that:

- a) people can only show their appreciation for a risk-free environment in economic terms;*
- b) people outside the cash economy or those with low wages do not appreciate a risk-free environment;*
- c) until a society is sufficiently economically developed, its people will not be able to show their appreciation for a risk-free environment by paying more for reduced environmental risks.*

This set of assumptions was the rationale behind waste disposal companies' attempts to build a nationwide network of toxic waste incinerators in poor communities across the United States, and to ship toxic waste to countries in Africa, the Caribbean and other Third World regions.

This flawed line of reasoning has reigned supreme at the World Bank over the past 50 years, where, contrary to Dr Fankhauser's statements, economists' calculations and assumptions are often central to the formulation of development policy. When World Bank chief economist Larry Summers' December 12, 1991, memorandum was leaked to the press, it became clear just how sinister this line of reasoning had become. Summers wrote:

A Messenger with Bad News?

Daphne Wysham accuses me and several of my colleagues of performing "the economics of genocide" ("Ten-to-One Against: Costing People's Lives for Climate Change", *The Ecologist*, November/December 1994). She is disappointed with the way economists have tried to assess the impacts of climate change. Although Ms Wysham has on the whole tried to give a more balanced view of our work than some other critics, some of her assertions are not correct. A few clarifications are needed.

Economists do not value lives. What they do estimate is people's appreciation of a risk-free environment. The difference is crucial. For example, if 1,000 people work in a factory where the risk of a lethal accident is 1:1,000 per worker and year, there will, statistically, be one such accident per year. If workers are willing to sacrifice \$1,000 in wages to get a safe job instead, they collectively forego earnings of \$1 million to enjoy a safer environment. Statistically, they have avoided one accident (saved one life) at a cost of \$1 million. That is where the misleading term "value of a statistical life" comes from. It has nothing to do with the worth of life as such.

I was criticized for using different values for goods in different countries. The values I use are in fact identical in the sense that they are identical fractions of income. If Europeans are willing to spend one per cent of their income on safety, Chinese are assumed to spend one per cent too. Using the same *absolute* values would completely disregard observed facts. Chinese are not willing to sacrifice ten times as much for environmental goods as Europeans. The chosen method admittedly replicates the unfair income

"Just between you and me, shouldn't the World Bank be encouraging more migration of industries to the LDCs [less developed countries]? . . . The measurement of the cost of health impairing pollution depends on foregone earnings from increased morbidity and mortality. From this point of view a given amount of health-impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages. I think the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable and we should face up to that."

Though it may be "economically illogical," the South resisted toxic trade (a global ban on waste trade will come into effect in 1998); communities across the United States have rallied against toxic waste incinerators; and Third World activists are loudly challenging World Bank development projects, thereby proving that a community's desire — and ability — to create or protect a risk-free environment has absolutely nothing to do with its people's ability to pay.

IPCC panellists would do well to toss out their old-school methods of calculating the interrelationship between environmental change, human lives and economic activity and look instead at what recent history is showing us: that once they know about the true risks to themselves and their environment, few people — poor or rich — are willing to accept those risks.

Japan and Racism

In the Pacific Northwest of the United States, environmentalists working to save ancient forests have been seeking to deflect anger at the economic loss caused by reduced logging. One strategy has been to engage in "Japan-bashing."

Japan is the destination of a good deal of the output of the Northwest's timber industry, much of it exported in the form of raw logs. The reasoning behind Japan-bashing seems to be that there could be the same amount of jobs in the US, with less logging, if Japan would accept wood that has been processed by US mills. However, such an outcome would not, by itself, reduce Japan's contribution to world deforestation; some of Japan's purchases of timber might just be diverted to another part of the world.

Despite all the concern in the US about economic competition from Japan, the general US public seems to know relatively little about that country. Some people are aware of Japan's peace movement, and realize that left-wing

parties in Japan are much stronger than those in the US; they may not know, however, about the right-wingers in Japan who are even more conservative than the leaders of the Liberal Democratic Party which ruled Japan for so many years.

What makes Japan-bashing a particularly dangerous form of racism is that it helps improve the political fortunes of these right-wingers, who are unrepentant about Japan's actions in the Second World War, advocate a return to the former political role of the emperor, and oppose Japan's "peace constitution." Historian Roger Daniels argues that racism directed against Asians in the US was one of the causes of the Second World War.

Environmentalists need to consider how Japan-bashing might be perceived in Japan. Middle-class people in Japan have become increasingly well-travelled, and thus have the opportunity to experience the US first-hand. The way minority groups in Japan are treated indicates that many Japanese are likely to be racist themselves, but that would not stop them from being angry at being the victims of racism. They are becoming aware of how their standard of living is lower than that of their counterparts in the US, particularly in the realm of housing. Partly because construction of buildings is the most important use of wood, Japan's per capita consumption of wood is lower than that of the US, making nonsense of any attempt to single out Japan as the environmental villain, rather than the US, or the countries of the North as a whole.

The government of Japan must have noticed how trade friction between Japan and the US attracts much more attention in the US than similar trade disputes between the US and the European Union. The reason can only be racism. A prudent government planner in Japan could easily come to the conclusion that a possible threat from the US requires that Japan acquire military power equivalent to its economic strength. Japan could acquire nuclear weapons in perhaps two months, and could possibly avoid the necessity of conducting tests of its bombs.

Japan's satellite-launching technology can be adapted for use in the development of intercontinental ballistic missiles. Right-wingers in Japan have wanted their country to be nuclear-armed for years; Japan-bashing is helping them reach their goal.

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Spanish Spelling

I noticed a quite humorous editorial/proofing error in "Who Broke Mexico?" (*The Ecologist*, Jan/Feb 1995). In the article, the words "Liberacion" and "Nacional" were printed with cedillas (ç) beneath the "c"s. The Spanish language has no cedilla, but "Liberacion" should have had an accent over the "o" (it did not). This probably the result of a French-educated or -speaking editor or proof-reader overzealously altering the Spanish language without properly checking the facts.

I have noticed that this appears to be part of a growing trend of non-Spanish-speaking editors of European journals getting things not-quite-right. In the April 1995 edition of *Indigenous Knowledge and Development Monitor*, the Spanish word "colorada" has been spelled "colourada" which displays the British propensity to add "u"s where they simply do not belong.

These errors are probably more striking here in the Western hemisphere, where the vast majority of us are native Spanish speaking and so many others see and hear Spanish every day. From this vantage point, this sort of error looks like arrogance and certainly ignorance.

In terms of the text of the article itself, however, I was most impressed. In a very short amount of space, Silverstein and Cockburn delved thoroughly into the economic and political background of the Zapatista uprising and the current "troubles" (to use a Northern Irish term) in Mexico.

Readers that want to explore the politics and thinking of the Zapatista Army in their own words would be advised to get a copy of *Zapatistas: Documents of the New Mexican Revolution*, published by Autonomedia Press (ISBN 1-57027-014, distributed by AK Press in Europe). The book collects the first six months of documents, communiqués, letters, essays and thinking of the EZLN into a single, 352-page source. It is useful for research purposes but even more valuable as an inspiring source of insight into how the indigenous rebels see themselves, and what they want. Most importantly, it is the only book about the Zapatistas whose sales actually return money to the EZLN (over \$1,000 has already been sent from sales since September 1994).

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Classified

DIARY DATES

1-3 September 1995: Annual Ecology and Peace Conference "POLITICAL HOLINESS, POLITICS, FAITH AND JUSTICE — EXPLORING THE LINKS" at the Hayes Conference Centre, Swanwick, Derbyshire. Speakers: Mike Hornsby-Smith, Catherine Shelley and John Battle. For more information, contact NLC Conference Secretary, 39 Eccleston Square, London SW1V 1BX. Tel: 0171-834 5138.

17-21 September 1995: International Conference on HABITAT FRAGMENTATION, INFRASTRUCTURE & THE ROLE OF ECOLOGICAL ENGINEERING The Netherlands Congress Centre, The Hague. For more information, contact: Congress Office ASD, PO Box 40, 2600 AA Delft, THE NETHERLANDS. Tel: +31-15 120234; Fax: +31-15 120250.

7-13 October 1995: International conference on ECOLOGICAL VILLAGES AND SUSTAINABLE COMMUNITIES at the Findhorn Foundation, near Inverness. For more information, contact: Findhorn Foundation Tel: +44 (01309) 673655; Fax: +44 (01309) 6731131; e-mail: ecovillage@findhorn.org

18-20 October 1995: International conference on SUSTAINABLE DEVELOPMENT: DEMOGRAPHY, PRODUCTION AND ECOLOGY in Sofia, Bulgaria. For more information, contact Marin R Mehandjiev, International Conference DEPECO '95, Scientific and Organizing Secretary, PO Box 52, 1231 Sofia, BULGARIA. Tel: +359 0237 2350, Fax: +359 0254 4686.

19 October 1995: IMPLEMENTING THE BIODIVERSITY CONVENTION, a one-day conference convened by the Royal Geographical Society and the Foundation for International Environmental Law and Development (FIELD) to examine legal aspects. For further information, contact Alison Glazebrook, RGS, 1 Kensington Gore, London SW7 2AR. Tel: 0171-589 5466; Fax: 0171-225 1425.

21 October 1995: Musicians Against Nuclear Arms CONCERT FOR PEACE 7.30 pm, St James's Church, Piccadilly, London. Pieces by Vivaldi, Mozart, Peteris Vasks, Haydn. Tickets £8, £6.50 (£7, £4.50 concessions) For more information, contact MANA, 71 Greenfield Gardens, London NW2 1HU. Tel: 0181-455 1030.

28 October 1995: ANTI-CORPORATIONS FAYRE organized by London Greenpeace & the McLibel Support Campaign. 11am-8pm, Conway Hall, Red Lion Square, London WC1. Free admission, wheelchair accessible. Stalls, discussions, networking, videos, creche. For more information, contact McLibel Support Campaign, c/o London Greenpeace, 5 Caledonian Road, London N1 9DX. Tel/Fax: 0171-713 1269

4-8 December 1995: CHINA RESOURCES RECYCLING '95 — at the Beijing Exhibition Centre, Hong Kong. For further information, contact Ms Iris Tse, Business & Industrial Trade Fairs Ltd, 18/F First Pacific Bank Centre, 56 Gloucester Road, Wanchai, HONG KONG. Tel: +852 2865 2633; Fax +852 2866 1770.

8-12 January 1996: THIRD INTERNATIONAL ECOCITY CONFERENCE in Senegal, West Africa, integrating traditional African village wisdom into an international ecological rebuilding programme. For information and to present papers, contact Joan Bokaer, Anabel Taylor Hall, Cornell University, Ithaca, NY 14853, USA. Tel: +1 (607) 255-8276; Fax: +1 (607) 255 9985; e-mail: ecovillage@cornell.edu

COURSES

3-16 September 1995 Two weeks residential PERMACULTURE DESIGN COURSE at Worthyvale Manor, Camelford, Cornwall. Permanent Agriculture — Permanent Culture — Sustainability — Practical strategies for land, buildings and people. Led by Patsy Garrard & George Sobol. For details, please send a stamped addressed envelope to: Trevor Lawrence, The Barn, Croanford, Wadebridge, Cornwall PL27 6JG, UK. Tel: 01208 841660.

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11-22 September 1995: Regional training programme for the Latin America and Caribbean region, MANEJO INTEGRADO DE ZONAS COSTERAS in San Pedro de Manglaralto and Bahia de Caraquez, Ecuador. For further information, contact The Training Coordinator, Coastal Resources Centre, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882, USA. Fax: +1 (401) 792-5436, Internet: markd@gsosun1.gso.uri.edu.

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WEC BOOK SERVICE

Karen Christensen, THE GREEN HOME. How to make your world a better place. A simple-to-use handbook which every household should have. The author shows how to create a non-toxic home and set up an effective recycling system, and gives advice on down-to-earth gardening and how to simplify life and reduce stress. 323pp, paperback, 1995, £9.99.

SM Mohamed Idris, FOR A SANE, GREEN FUTURE. We are living on borrowed time — catastrophes are in the making. The author suggests drastic changes in the way our societies are organized, a change in values so that everybody is able to enjoy a decent standard of living. If this seems Utopian and unrealistic, the author insists that our present lifestyle with its devastating effects is what is unrealistic and impractical. 258pp, paperback, 1991, £9.

Crispin Aubrey, THORP: The Whitehall Nightmare. The British government has given British Nuclear Fuels clearance to proceed with the reprocessing of imported nuclear spent fuel, despite the industry already having contaminated the Irish Sea and the Cumbrian Coastline irretrievably with radioactive wastes. The author traces the story of Thorp from the original 1977 Windscale Public Inquiry to the present day. 86pp, paperback, 1993, £5.99.

James Goldsmith, THE TRAP. Rising long-term unemployment, increasing violence, growing poverty in urban slums and environmental deterioration — these are the symptoms of a deeply-troubled society. More frightening still is the pervasive feeling that those in power do not know what should be done. In this book, the author takes on conventional wisdom and poses the questions that politicians back away from. 214pp, paperback, 1994, £7.99.

Vandana Shiva, STAYING ALIVE: Women, Ecology and Development. A key book. Shiva argues that there is only one path to survival and liberation for nature, women and men, that of ecological one of harmony, sustainability and diversity as opposed to domination, exploitation and surplus. Shiva explores the unique place of women in the environment, both as its saviours and as victims of ecological maldevelopment. 250pp, paperback, 1992, £8.95.

WORLDWATCH PAPER NO. 124
DM Roodman & N Lenssen, A BUILDING REVOLUTION; How Ecology and Health Concerns are Transforming Construction. 67pp, 1995, £3.

Orders with payment (credit cards accepted) to WEC Book Service, c/o The Wadebridge Bookshop, 43 Molesworth Street, Wadebridge, Cornwall, PL27 7DR, UK. Tel: 01208-812489, Fax: 01208-815705

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