

THE Ecologist

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RETHINKING BASIC ASSUMPTIONS

OCTOBER 2000

YOUR MONEY AND YOUR LIFE?

THE CANCER CHARITIES EXPOSED



ROBOT WARS

An exclusive interview with techno-guru Bill Joy

COURT IN THE ACT

How to use the law to fight corporate bullies

AMAZON FACTS

Why 'experts' lie about deforestation





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BIG STEPS BUT SMALL VISION

According to Dr Oliver Sacks, the famous
 neurologist, it is a rare disease. So much
 so, that when he stumbled across a sufferer,
 it took him weeks to put the puzzle together.
 Even then, it was not until he discovered
 reports by another doctor that he was able to
 put a name to the problem: prosopagnosia.

He refers to his patient as Dr P. A distin-
 guished musician and teacher, Dr P had devel-
 oped what at first seemed to be visual prob-
 lems, but which, it later transpired, were far
 more complex. Sacks describes Dr P's condition
 in his book *The Man Who Mistook His Wife For
 A Hat*: 'He saw alright, but what did he see? I
 opened a copy of the *National Geographic* mag-
 azine, and asked him to describe some pictures
 in it. His responses here were very curious. His
 eyes would dart from one thing to another,
 picking up tiny features, individual features... A
 striking brightness, a colour, a shape would
 arrest his attention and elicit comment – but in
 no case did he get the scene as a whole. He
 failed to see the whole, seeing only the details,
 which he spotted like blips on a radar screen.'

On another visit, Dr Sacks presented his
 patient with a bundle of photographs of his
 family and close friends. Same problem. 'It was
 not merely the cognition at fault; there was
 something radically wrong with the whole way
 he proceeded. For he approached these faces –
 even those near and dear – as if they were
 abstract puzzles or tests.' And when Dr Sacks
 handed his patient a freshly cut red rose, 'he
 took it like a botanist or morphologist given a
 specimen, not like a person given a flower.
 "About six inches in length", he commented.
 "A convoluted red form with a linear green
 attachment." And what did he think it was?
 "Not easy to say."'

For a long time, Sacks was concerned that he
 had stumbled across something new and
 unprecedented. He need not, however, have
 worried. For prosopagnosia is a common com-
 plaint. While the repercussions of Dr P's illness
 were narrow and sadly amusing – mistak-
 ing his wife's head for his own hat and
 tugging furiously at it for instance – the
 wider ripples of this illness, as yet not
 formally defined, are already being felt
 all around us. The disease is the same –
 only we call it 'reductionism'.

It is this condition that has led to
 some of the more bizarre excesses of
 modern industrial society. We have,
 for instance, scientists who
 believe that genetic technol-
 ogy is precise and accurate
 and who feel that they have
 sufficiently mastered it to
 be able to reshape the
 very nature of many of
 the world's species. But,
 typical of prosopagnosia
 sufferers, they ignore what
 any untrained observer
 could not have missed – that
 genes do not function in isola-
 tion, but rather within the con-
 text of the genome, and then

again within the context of the organism and
 indeed the environment.

Vivisection is another example of prosopag-
 nosia in action. Here, scientists still believe
 (despite all available evidence) that if a chemi-
 cal has little effect on a rat it will be OK for
 humans. Even basic concerns like skin health
 have been stuffed into their own compart-
 ments so that specialised skin doctors, exam-
 ining skin problems in isolation from obvious
 contributors like poor diet and stress, can only
 prescribe skin creams.

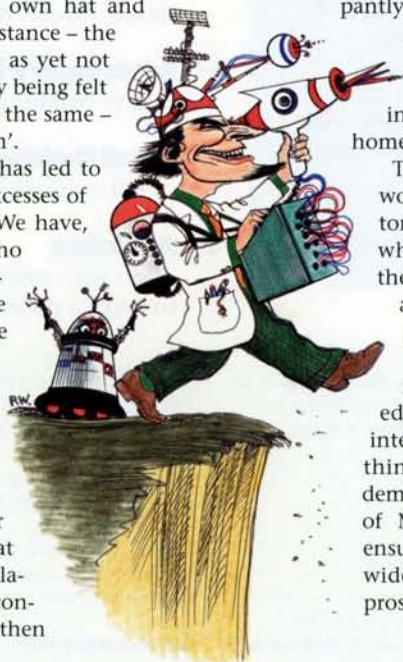
Probably the most alarming example of
 widespread prosopagnosia, however, has been
 in our obsessive treatment of mega-technology.
 Bill Joy's eerie description in this issue of the
 potential dangers of nanotechnology was given
 further legitimacy last month with the cover-
 age in *Nature* magazine of the 'successful' cre-
 ation of self-replicating foliage-eating micro-
 robots. The scientist responsible explained
 breathlessly that we are a 'big step' away from
 any serious danger and then astonishingly
 went on to explain exactly how he and his col-
 leagues are attempting to achieve that 'big
 step!'

In a recent issue, this magazine ran an arti-
 cle on the \$3.5 billion 'Cassini Mission', which
 involves sending a spacecraft to Saturn and
 back. The craft will be fueled by 72.3 pounds of
 Plutonium-238, one pound of which could
 hypothetically induce lung cancer in every per-
 son on Earth. The possible gain, according to
 enthusiasts, could be more information on the
 workings of the solar system. The possible loss
 is barely worth considering. Who makes these
 decisions for us? Who decided to spend giant
 chunks of taxpayers' money on projects that
 might kill us all off? Again, it was the prosopag-
 nosia-afflicted experts, who are incapable of
 seeing the big picture realities of the work they
 conduct.

The difficulty for those who have not been
 afflicted with this condition boils down to self-
 restraint. Who are these people who so flip-
 pantly gamble with our lives? Are
 they not criminal? Should
 they not be locked away?
 Should we not be organis-
 ing vigilante marches on their
 homes?

The answer is that to do so
 would be demonstrating symp-
 toms of the same disease from
 which they suffer. Removing
 these people would simply cre-
 ate job vacancies. What
 should be made to stand trial
 is the system that compart-
 mentalises worldly knowl-
 edge, and which reduces an
 interdependent world into some-
 thing that science can then
 demolish and rebuild in the image
 of Man. It is this system that
 ensures the end of wisdom. It is
 widespread, institutionalised
 prosopagnosia.

ZAC GOLDSMITH



THE Ecologist *contents*

VOLUME 30 NO 7, OCTOBER 2000



COVER STORY

Britain's big cancer research charities are a multi-million pound industry. Each year a trusting public donates hundreds of millions of pounds. But the truth behind the 'cancer industry' is more complex, and makes alarming reading. For while cancer rates continue to escalate, the main charities remain determined to avoid looking at the real causes of this modern day epidemic, focusing instead on fashionable and expensive 'cures' often for quite rare strains of the disease.

Here Martin J Walker explains why the cosiness that has developed between the pharmaceutical industry and the cancer establishment renders big cancer charities part of the problem, not the solution.

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Cover image: Hugh Threlfall and Lou Tait

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Martin J Walker investigates the 'cancer establishment'. What do the big cancer research charities really do with your money? And for whose benefit?

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Leading technophile and computer guru Bill Joy is having second thoughts. He fears that we may be designing tools that will replace our species and render the planet uninhabitable. In an exclusive interview, he talks to Zac Goldsmith about our technological future.

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We have changed the face of the planet almost unrecognisably over the last 200 years – and now we talk of re-engineering ourselves to adjust to it. Edward Goldsmith says we have missed the point again.



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... on why environmentalists who really want to make a difference should get on their bikes.



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George Orwell and Aldous Huxley wrote the two most famous dystopia novels of the 20th century. But which one was right? Kirkpatrick Sale compares today's fact with yesterday's fiction.

While the world exploits Africa, we examine ways in which the continent can heal itself.

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Please attach your name and postal address, even when sending by email. The editor reserves the right to shorten or edit correspondence where necessary.

BOMBS AWAY

I am always glad to see sympathetic coverage of the Vieques issue but PLEASE, get our governor's name right. Even though I think Puerto Rico Governor Rosselló betrayed us on the Vieques issue I don't like to see his name anglicised to 'Russell'.

Gov Rosselló originally respected the views of the Puerto Rican people, which were overwhelmingly for peace for Vieques which meant departure of the US Navy and return of the land to the people of Vieques. As you reported in the July/August issue of *The Ecologist* (Vol 30 No 5), the special commission set up by Rosselló concluded that the US Navy should leave and that the land should be returned to the people of Vieques. Rosselló supported the conclusion of his commission. He said publicly, in English, 'not one more bomb'.

Then, early this year, Rosselló and Clinton struck a deal: bombing would continue with inert ordinance for three years. The people of Vieques would be allowed to vote in a referendum. The Navy picks the date of the referendum – 270 days before or after 1 May 2001. The Navy dictates the two choices on the referendum:

- 1 The Navy leaves Vieques at the end of the three years of military exercises using inert bombs.
- 2 The Navy stays indefinitely using live bombs. 'Not one more bomb' isn't a choice.

The overwhelming majority of Puerto Ricans living on Vieques as well as those living on the main island of Puerto Rico want peace for Vieques and want the navy out. People reacted to the Clinton/Rosselló deal. Within three weeks (on Presidents' Day, 21 February) the largest demonstration in Puerto Rican history took place. It was a joyous peaceful march organised by religious leaders. The theme was 'Paz por Vieques'.

Before the march, Rosselló castigated religious leaders for getting involved in politics (being for peace is very political), twisted what religious leaders had said and urged people to practice 'religious disobedience'. His attempts to discourage the march may have helped to make it the largest demonstration in the island's history.

BETTY QUICK *Orocovis, Puerto Rico*

WATER IS LIVESTOCK

I read *Nor Any Drop to Drink: The World is Running Out of Water – 'Ed Metcalfe finds out why'* in your July/August issue (Vol 30

SEEING THE LIGHT?

Jonathon Porritt writes that individuals working within companies 'are quite genuinely looking for help' in developing sustainable practice. No doubt. The problem remains, however, that the maximisation of profits is the whole 'reason for being' of companies working within the corporate capitalist system, and this goal is inherently unsustainable and in fact anti-life.

Porritt's partners – with every atom of their corporate structures designed to generate maximum revenue at minimum cost – are not, and never will be, in a position to metamor-

phose themselves into organisations that subordinate profit to planet in any significant way. Only massive popular pressure applied externally can achieve this. And as Porritt's corporate friends know all too well, the best way to limit popular awareness and concern is to convince the public that the managers of the status quo have 'seen the light'. Businesses are so eager to speak to Porritt, not because he is uniquely able to help them change, but because he is uniquely able to help them look like they already have changed.

DAVID EDWARDS *Bournemouth, UK*

No 5) expecting to learn why. In an otherwise excellent article I read all about water wastage, and that water is becoming scarce due to desertification, but not one word as to why this is happening. According to Metcalfe, the only hope apparently lies in extremely costly desalination unless 'some scantily dressed holy man' emerges from the desert to save us.

The greatest source of water loss over about two-thirds of the world's lands that experience seasonal as opposed to perennial precipitation was not mentioned. As the Desert Research Foundation in Namibia has shown at Khorixas, 83 per cent of the water soaking into the soil is subsequently lost to surface evaporation from bare and exposed soil. I have worked on this problem for the last 45 years in the Western US states, Australian, many African countries, Mexico, Canada, India, Pakistan etc and almost universally in such environments I note it is common for 50 to 90 per cent of the soil between plants to be bare and exposed to wind, sun and rain.

In perennially humid environments it is simply not possible to expose soil between plants over millions of hectares of land by either resting or excessively disturbing the land because the cycle of life birth, growth, death and decay is not interrupted by disturbance or resting. The removal of large herbivores to rest such land has little effect as most herbivores in such environments are insects. However, in seasonal rainfall environments, whether rainfall is high or low, it is very easy to expose soil. In these environments a high percentage of vegetation dies off every dry season at the same time as the insects and micro-organism populations die down. Such environments for millions of years supported vast populations of large herbivores, which although they cannot digest

much of the course plant material, do so in a symbiotic relationship with micro-organisms in the moist environment of their gut. It was this symbiosis between large herbivores and micro-organisms that sustained biological decay as well as adequate disturbance on a periodic basis. When such lands are rested excessively through having too few large herbivores no longer functioning in large herds, rapid biological decay is replaced by gradual oxidation and weathering, most perennial grass species die out. Grassland shifts to larger plants like shrubs and if rainfall is high enough, trees.

A high degree of exposed soil sheds water during high rainfall, hence the increasing severity of flooding in Mozambique, the US, Pakistan, India, Bangladesh, South Africa etc. A high degree of soil exposure also results in high surface evaporation resulting in years of low rainfall becoming severe droughts. At times the two go hand in hand.

Fortunately there are only two things that result in soil exposure between plants over millions of hectares of moderate to low seasonal rainfall – too few large herbivores wandering around continually and/or fire. Tragically maintaining too few large herbivores, scattered or loosely herded, and the use of fire are widespread practices, thus ensuring the continued expansion of desertification.

There are literally thousands of people in several countries who are beginning to understand the need to maintain the decay process and adequate periodic disturbance in seasonal rainfall environments, and that can only be done with high numbers of large herbivores. In many countries now only livestock are left to us to reverse desertification. Recently I photographed two US government officials

drinking water from a spring flowing at over 200 litres per minute in a 100mm rainfall 'desert'. This spring on public land had gone dry 50 years ago, but given four years of periodically bunching livestock in increased numbers on its headwater area it was flowing as in the past. There are profoundly simple solutions that earn money while feeding and supporting people that should be investigated properly before we engage in extravagant desalination 'band aid' solutions or passively wait for some scantily clad holy man to save us.

ALLAN SAVORY *Albuquerque, USA*

SOYA SADNESS

I felt profoundly depressed after reading Mark Lynas's article on GM soya (*Don't count your GM chickenfeed*, Vol 30 No 5) published so soon after our article on the Brazilian soya industry. Where does he think non-genetically modified soya comes from? What does he think might be the environmental impact of augmenting world market for non-modified soya? Here, in Brazil, the prospect of a successful boycott of GM animal feeds, 'forcing both Cargill and ADM to switch the majority of their processing and transporting capacity into non GM' is frankly terrifying. I admit, there have been times that I wishfully longed for contamination of Brazilian soya with the

Frankenstein variety, as a last ditch attempt to shift focus of the environmental heavy-weights to the devastation that Brazilian soya is wreaking on its ecosystem. Soya is Brazil's major export product. It may be genetically 'clean', but still causes extensive deforestation, soil compaction, poisoning of land and river systems with the vast quantities of agrotoxics and fertilisers, and the usual litany of social abuses and threats to indigenous peoples associated with the agricultural industry in Brazil. Having devastated the vast central savannah region, with the growing global markets and no more savannah left to consume, the soy frontier is rapidly expanding north into the Amazon Basin. Over the last couple of years, the infrastructure associated with this massive export industry has been established in the Northern Amazonian states, and soya is now shipped north in vast containers through the Amazon to Europe and Japan. This infrastructure has its own damaging impact in addition to helping to seed soya plantations within the heart of the rainforest.

NICOLE FRERIS MANAUS, *BRAZIL*

FISH SCALES

The trouble with Ed Metcalfe's fish analysis is its logical conclusion. It is true that wild fish are being over consumed and that

many seemingly abundant species will be rendered extinct before long. But so too is it true that the fish farms that presumably he endorses are responsible for the death of a large proportion of the world's few remaining intact reefs. Since reefs provide something of a womb for the reproduction of deep sea fish – the net effect is the same.

If only one message has been successfully transmitted following decades of *Ecologist* articles, it must surely be that relocation of the food economy is the only honest answer to the problems Metcalfe explores.

JOANNE JAKEMAN *Cambridge, UK*

FIGHTING BACK

I was thrilled and horrified to read the article on Wal-Mart in your September issue (*Suckers*, Vol 30 No 6).

I can't quite believe that this company, which we have been generally led to believe will be good for us, is as bad as you say. I will have to trust your judgement on this – and assume, of course, that if they don't sue there must be something in it!

But if it is true, why is something not being done about it? I know it is easy to ask this question, sitting here in front of my typewriter – but I ask it anyway. Why is nobody acting to stop the spread of this company in Britain?

JANET ROWBOTHAM *Keynsham, UK*



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THERE'S NO SUBSTITUTE FOR THE OU EXPERIENCE





GET WAL-SMART

An enthusiastic response to our article on Wal-Mart last month has confirmed the need to keep tracks on the mega-sucker's ongoing progress as it creeps across the UK.

Wal-Mart has set its mind on becoming part of British lifestyle and landscape – and to achieve this, it has to change that landscape for good. Its ambition is to become Europe's largest retailer by 2004 and the UK is its stepping-stone towards this goal.

Why does it matter? It matters because the corporation's record is a disaster area – and there is no reason to believe it has changed. It matters that US courts again and again found Wal-Mart to have lied, falsified, destroyed and withheld documents, to have committed civil fraud, to have actively sold counterfeit goods, to have illegally fired workers. It matters that in April 1999 Wal-Mart was fined \$18 million for hiding evidence in a court case, or that in August 1999 a Wal-Mart contractor in Bangladesh was paying teenage seamstresses less than that country's minimum wage and forcing them to work overtime. It matters that in March, the Maine Department of Labour fined Wal-Mart for what it called greatest incidence of child labour violations. All of this matters because this company is coming your way – and it wants your support, and your money.

To the UK government, though, 'competitive' price-cuts are all that matter, for they are 'good for consumers' and good for inflation. But what do we get in return? True, Wal-Mart's acquisition of Asda brought a nice cash sum of £6.7 billion into the UK economy, most of which went straight into the pockets of shareholders – including one Archie Norman, then Asda's chairman, now an increasingly absurd Tory 'environment' spokesman. Norman is believed to have pocketed about £4.6 million from his shares and Allan Leighton, now CEO of Wal-Mart Europe, then CEO of Asda, about £3.3 million.

It's a lot of cash, but ultimately most will probably end up in Wal-Mart's headquarters in Arlington, US. And this is the rub – virtually all the money that Wal-Mart rakes in during its journey through Britain will go straight home to the US. As for those jobs it provides – true, unions usually ensure minimum standards, but they are the thorn in Wal-Mart's side. In the US, where all Wal-Mart employees are banned from union membership, the company pays 14 per cent below the retail industry's minimum wage, and as the *Wall Street Journal* pointed out, it is ultimately the taxpayer who subsidises the company's low wages. Only three months ago, German Wal-Mart employees launched a strike because the company has refused to sign the German wage agreement and join the employers' union. A 'go-ahead' for UK Wal-Mart employees to join unions would be a first in the company's 38 years of existence.

Asda/Wal-Mart's first new UK store at Patchway, Bristol, was

launched in July with 40,000 products, 35 of which are even organic; 200 new suppliers, some of which are even local; 1,000 car-parking spaces, a 'community colleague' to support 'community activity' and so on. Rumour has it that there is even a space to 'park' dogs. The 93,000 sq ft. mammoth store has created 200 new jobs. Wal-Mart typically employs 65 to 70 workers for every \$10 million in sales, whilst small businesses average 106 for the same amount. But more jobs are to be created, since the company intends to open a minimum of 59 stores within the next five years. No matter that a 1998 National Retail Planning Forum report confirmed that an average sized superstore costs on average 276 local jobs. Or that a report by the Institute for Public Policy Research calculated that a typical (approximately a third of Patchway's size) out-of-town supermarket causes £25,000-worth of congestion, pollution and associated damage every week.

But it gets worse. In August *The Independent* reported that Wal-Mart was considering a second assault with a £6bn bid for Boots. A bid for 'the Chemist' would re-direct a market estimated at £11 billion per annum into Wal-Mart's bank accounts. It would also give access to Boots's larger out-of-town

Halfords subsidiaries which could be converted into Wal-Mart megastores without the need for local authority consent.

For Wal-Mart essentially thrives on economies of scale, and for that it needs space; a lot of space. Converting warehouses, buying existing shopping centres, business parks and retail parks are obvious options if it wants to bend the UK's currently tough out-of-town planning regulations. Currently, there are about 500 out-of-town retail parks in Britain. A third of them have the prized open 'A1' consent – where food and non-food items can be sold.

There are other ways for Wal-Mart to expand. Four days before the Asda/Wal-Mart merger announcement in June 1999, Wal-Mart executives met Tony Blair. Planning Minister Richard Caborn told the Commons a few weeks later that Wal-Mart/Asda and other chains would have to demonstrate that there was 'a need' for any plans involving out-of-town supermarkets. But to quote from *The Guardian*, 'by leaving unexplained who will define that need and how, Mr Caborn has left an opening wide enough to drive a construction fleet through'.

For example, the Competition Commission might reconsider forcing companies to sell stores and may recommend changes to planning laws aimed at opening up food retailing to new entrants. A bold stroke would be to use the excuse of the nation's grocery bill to ease up on planning restrictions. So stay vigilant – because however they do it, Wal-Mart will be coming to your town – probably sooner than you think.



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TICKING TIME BOMBS

The terrible fate of the submarine Kursk only highlights the dangers of Russia's decaying nuclear fleet.

When both an atheist and a commanding officer declare a situation so grave that only praying might help, then the outcome is probably beyond hope. This is what happened on Russian national TV four days after the nuclear submarine *Kursk* plunged to the bottom of the Barents Sea. But the *Kursk* was not the first such vessel to be lost – and will probably not be the last, for Russia's fleet of nuclear submarines are decaying daily, with potentially disastrous consequences for more people than just their crews.

In a recent interview with *Der Spiegel*, nuclear expert Andrej Solotkow of Bellona, one of the most respected Russian NGOs, told reporters that the Arctic sea currently contains around 17 nuclear reactors like that



on board the ill-fated *Kursk*, of which 7 are still fuelled. The nearby Kara Sea contains vital chunks of the nuclear ice-breaker *Lenin*. But this is only the beginning.

Accidents like the *Kursk* have happened before. In 1963, 129 crew members died when the American nuclear submarine *Tresher* sank. Five years later, the *Scorpion*, another American sub, plunged to the bottom of the Azores. In 1970 K-8, a Russian nuclear sub sank in the Gulf of Biscaya. In 1986, and in 1989, two more Russian vessels were lost.

Russia has a fleet of 250 nuclear subs, 170 of which are currently 'out of order'. One hundred are stored at Murmansk and over half still contain their nuclear reactors and fuel. In an article published in the *International Herald Tribune*, experts including Vladimir Uryvsky of Russia's Atomic

Energy Ministry and Alexander Kiryushin, leader of a team that designed the *Kursk's* nuclear reactors, said that the threat of radiation leaks from the *Kursk* would only pose 'moderate risks in coming decades'.

Well, they would, wouldn't they? Because the *Kursk*, like all the other sunken giants, is a ticking time bomb at the mercy of the sea. A recent article in *The Sunday Times* suggested that the *Kursk* sank after munitions tests went terribly wrong. The second of the two explosions recorded on 12 August was the single most powerful explosion ever registered in the area; possibly caused by warheads and fuel exploding inside the vessel. And a shocking report by Bellona (www.bellona.no/e/index.htm) on nuclear contamination of Russia's Northern Fleet describes unstable nuclear reactors aboard rusting submarines as potential Chernobyls.

NEWS IN BRIEF

GOOD OLD US TV...

The US TV channel ABC has admitted that one of its recent, controversial '20/20' reports questioning the relative purity of organic produce was wrong. The report, which was first aired in February and repeated in July, seemed to debunk the common belief that organic food is safer than chemical foods because no pesticides are used. Reporter John Stossel said on air that tests conducted for ABC news 'surprisingly found no pesticide residue on conventional samples or the organic.' That was simply wrong. The Washington-based Environmental Working Group, which successfully contested the existence of these tests is calling for Stossel to be fired. ABC says it is investigating why the mistake was repeated.

...IS STILL AS BIASED AS EVER

Meanwhile, a jury in Florida ruled that another US channel, Fox TV, illegally fired reporter Jane Akre for refusing to run a deliberately false report on genetically engineered growth hormone (BGH), the controversial drug used to increase milk production. Testimony during the trial showed how Monsanto, who developed BGH, had warned Fox of 'dire consequences' if the station went ahead and aired her critical report – and that, as a result Fox had edited her report to change its mes-

sage. The jury ruled that Akre was fired for refusing to participate in 'the broadcast of a false, distorted or slanted news'. The landmark decision was the first time Florida's 'whistleblower law' has been used to protect a journalist fired for refusing to slant the news.

GMOS: BIG IS HIDEOUS

Novartis, which recently announced that it would go GM-free, will announce its merger with AstraZeneca, the world's biggest 'life sciences' companies this month. AstraZeneca has an impressive 20 per cent shareholding in ExSeeds Genetics, a US corporation which has won a patent on terminator technology. ExSeeds's terminator technology patents include soyabean and wheat, the world's most important food crops.

SALMON GOING WILD

In British Columbia, Canada, over 32,000 farmed Atlantic salmon escaped into the wild. The pen belonged to the Norwegian-based Solt Sea Farms (SSF), one of the world's largest producers of Atlantic salmon and trout with sales amounting to US\$72.2 million in the first six months of 1999.

OOPS: MONSANTO SLIPS UP AGAIN

Monsanto has been ordered to pay \$90 million in connection with a State office building contaminated with PCB-laden insulation in Pennsylvania. Solutia Inc, a Monsanto spin-off, will take financial responsibility. Elsewhere, Monsanto, aiming to export its

technology into the 'emerging' Eastern European market, has started a 'Farmers Club' in Poland. Its aim is to target large farmers and to create a lobby to push for GM agriculture. The club will be officially launched in November – for details, see www.klubfarmer.pl

THE RAPE OF THE CROP

Unperturbed by threats of legal action from Greenpeace, the UK Agriculture Ministry has announced that it will allow GM crop trials to go ahead this autumn. Greenpeace had argued that the Government should have applied for a change of use for the land involved with trials because the land will no longer be for agricultural use but for research purposes. The company involved in sowing winter oilseed rape is Aventis CropScience UK, part of the Franco-German pharmaceuticals and agriculture group Aventis.

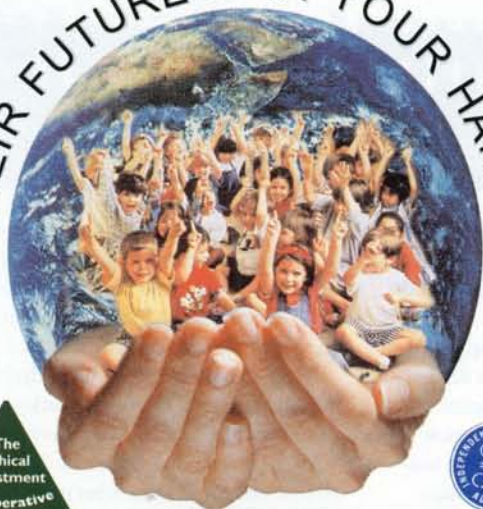
PIE IN THE EYE FOR CHRÉTIEN

Jean Chrétien, Canada's Prime Minister, was honoured as the first head of state to receive the distinction of being 'pied'. To mark the event, the villain of the piece, 'un grand pâtissier' created a 'Roundup Ready Frankencreampie' to highlight Chrétien's role in pushing unlabelled and untested frankencrops around the world. Bon appetit, Jean!

DAM BUSTING

Pakistan's government has cancelled the ill-conceived Kalabagh dam in the Sindh province.

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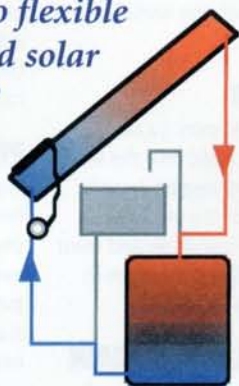
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EAT UP YOUR TUMOURS

Apparently, according to the experts, it is now 'perfectly safe' to eat tumours, sores, glandular swellings, cancers...

The USDA, the American Federal Agency which oversees food inspections, is imposing new rules that classify as 'safe for human consumption' animal carcasses with certain illnesses and open sores. Among the diseases the Agency, in its wisdom, has decided do not present a health danger are: cancer, diseases caused by intestinal worms, sores, infectious arthritis, glandular swellings and a pneumonia of poultry called airsacculitis.

At a public hearing earlier this year, Karen Henderson of the Agriculture Department's Division of Field Operations admitted that 'there is no system that we are aware of that is capable of removing every defect from the process'. Reassured? You shouldn't be.



AMERICANS DISTRUST BIG BUSINESS

A revealing public opinion poll in the September 11 issue of the US magazine *Business Week* turns up high levels of suspicion amongst the US public about the power and influence of big business. A remarkable 72 per cent of Americans believe that business has too much power over too many aspects of American life, while 74 per cent think big companies

have too much political influence. 73 per cent say top executives are paid too much, while just 4 per cent believe that the sole purpose of business should be to maximise profits. Poor *Business Week*, the corporation's friend, is confused. Big business, it says, has helped create 'unprecedented prosperity' – yet still Americans don't trust it. 'What', it asks plaintively, 'is going on?'

STILL TAKING TOO MANY RISKS

According to a report by the Union of Concerned Scientists (UCS), the US Nuclear Regulatory Commission (NRC) is increasing the likelihood of a serious nuclear plant accident by falsifying risk assessments which allow dangerous plants to continue operating.

The UCS report argues that risk assessments of nuclear plant accidents depend on the probability of occurrence and consequences if such would occur. Standard NRC risk assessments only look at the probability of an event. The UCS argues that when consequences are severe – as would be from such accidents – prudent risk management dictates that probabilities are kept very low.

The UCS's report is based on observations of how nuclear plant risk assessments are performed and how their results are used.

For example, the NRC presumes that nuclear plants always conform with safety requirements, despite the fact that over a thousand violations are reported each year. Nuclear plants are assumed to have no design problems, even though hundreds are reported each year. Ageing is assumed to result in no damage. Reactor pressure is assumed to be foolproof despite the fact that this very factor led to the closure of the Yankee Rowe nuclear plant. Plant workers are assumed to be less likely to make mistakes than actual operating experience demonstrates... and so it goes on.

The report concludes that nuclear risk assessments in the US are 'seriously flawed and results are being used inappropriately to increase – not reduce – the threat to the American public'.

NOTES & QUOTES

'We cannot let terrorists and rogue nations hold this nation hostile.'

The verbally-challenged George W Bush

'The intention is to generate UK data to demonstrate that the feeding of GM maize silage to cattle is just as nutritious [as conventional crops] and does not carry any risks to the animals themselves or the milk they produce.'

Clive Rainbird, Aventis Crop Science

'We must remember that the WTO benefits every farmer and every business that sells its goods and services in foreign markets. If we did not have the WTO... we would only have the rule of the jungle.'

GOP Senate Charles E Grasse

'It was totally unexpected.'

James McCarthy of the UNFCCC, commenting on the disappearance of the North polar icecap.

'In less than 10 years, the international division has grown to over 1,000 stores and should exceed \$30 billion on sales this year. The exciting thing about this division is that it is still in its infancy.'

S Robson Walton, Chairman of the Board, Wal-Mart, in the company's 2000 Annual Report.

'Let's be the most friendly – offer a smile of welcome and assistance to all who do us a favour by entering our stores... Exceed your customers' expectations. If you do, they'll come over and over again.'

Sam Walton's 'aggressive hospitality' dictum.

According to the American Transportation Association (Apta), a person commuting 10 miles to work every day by train instead of by car could save as much as 314 gallons of petrol per year.

Although Zambia is already a part of the West's official debt programme, its interest payments are still set to rise from £91 million in 1999 to £235 million in 2000.

Home Office figures showed a 14 per cent rise in scientific procedures involving genetically modified animals between 1998 and 1999, up by 63,000 to 511,000.

WE, THE CORPORATIONS...

It seems that the principles of the WTO violate the United States Constitution – which could be the trade policeman's biggest setback yet.

A piece of legislation known as the 'Archer Bill' is expected to reach the US Senate and House Floor early this month. It could have big repercussions. It stems from a call by the chairman of the so-called 'Ways and Means Committee', Bill Archer, to support a recent WTO ruling to eliminate tax advantages enjoyed by US companies over European ones.

European exporters to the US are exempt from European VAT, while US companies exporting to Europe have to pay corporate income tax on all profits after sales. The US Congress therefore introduced a system called Foreign Sales Corporations (FSCs) in the 1980s, which exempted some of the taxes on US companies.

In 1998, the EU asked a WTO dispute settlement panel whether this arrangement violated WTO rules against export subsidy. The panel ruled a year ago that it did, setting the deadline of October this year for the end of the FSC subsidy. Unless Congress

changes the tax law to comply with WTO ruling, the US faces the possibility of retaliation from the EU.

This WTO ruling will set an incredible precedent, for it essentially makes Congress bow to a WTO ruling. According to an article published in *The Nation*, article 1, section 8 of the US Constitution gives the power to lay and collect taxes and to regulate commerce with foreign nations to Congress exclusively. In other words, when members of Congress are sworn into office, they agree to abide by the Constitution – not by international dictates. The issue here, say WTO critics, is sovereignty, not trade.

Meanwhile politicians on both sides of the Atlantic are wondering might happen next. According to Alan Wolff, architect of some of the most successful international trade efforts, free-traders should tread lightly when Congress is considering legislation, possibly this autumn, on whether to continue US participation in the WTO. Benefits of membership are becoming more and more difficult to defend.

WHAT A SILLY BANKER

The World Bank's boss has signed up to a new 'Fund' aimed at preserving the biodiversity which his own policies are destroying. Some mistake surely...

In a comment article in *The International Herald Tribune*, James Wolfensohn, head of the World Bank, Peter Seligman of Conservation International and Mohamed El-Ashry of the Global Environment Facility announced the creation of a grandly titled 'Critical Ecosystem Partnership Fund', for which they aim to rally \$510 million. Its purpose? Saving what remains of the world's biodiversity. 'Outright destruction is proceeding apace,' they write. 'Conserving biodiversity is not just about long-term welfare. It is about survival, because so many depend on the habitats that support biodiversity for their daily needs.' But it's not looking good: 'overall we are failing to stem the lethal dynamic of chronic poverty and growing population, which is destroying species a thousand times faster than ever before.'

Well spotted, James. And well done for contributing to solutions through your new fund, which 'will be flexible enough to ensure that conservation investments achieve maximum impact. Streamlined decision-making will allow quick responses to new threats and provide for urgent small-scale projects. Grant guidelines will be provided on the Internet, and application can be submitted online.'

Excellent. But hang on one second. Surely 'chronic poverty' and 'outright destruction' of species are to an extent the result of degenerate, corporate-led 'free market' economics. And whose vast loans and political clout help such a world order to flourish? Why, the World Bank, which with its sister, the IMF, has aided the exploitation and degradation of the world's natural resources for over 50 years. Unless these policies are reversed no 'online applications and guidelines' will save us.



REUTERS

NEW FORMS OF TERRORISM

GM TERRORISM



MUSIC TERRORISM



AGRICULTURAL TERRORISM



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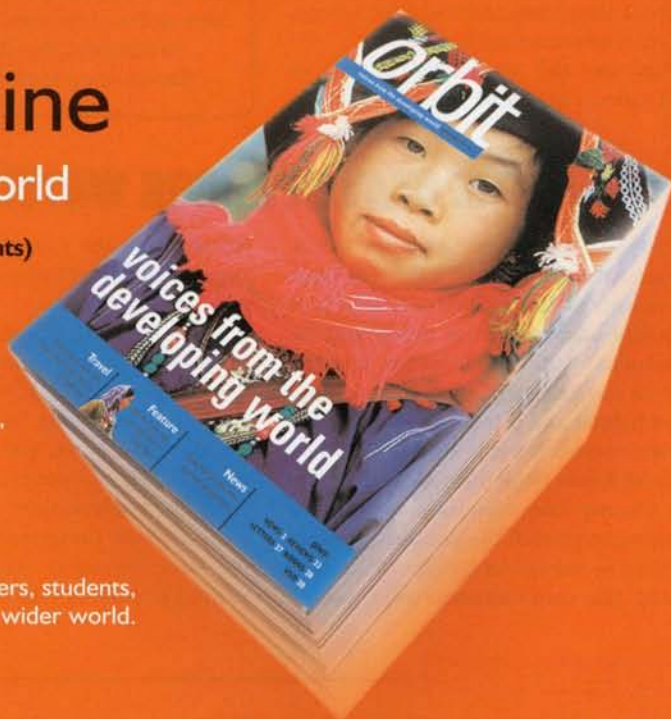
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Jon Snow, Channel 4 News





CAMPAIGNS

UK SAVE SCOTLAND'S RIVERS

The salmon-farming industry is the worst environmental catastrophe to hit the Western Highlands in recent history. According to James Butler from Scotland's

1976 to 120,000 tons last year. Besides the fact that fish farms discharge toxic waste into rivers and the sea, farmed fish regularly escape into the wild. Some are genetically modified, and as is the case with industrial land farming, are fed on a rich cocktail of antibiotics. Feeding fish with antibiotics weakens their immune systems, which in return gives rise to new diseases. There have been hundreds of thousands of fish deaths from 'mystery' causes, and numerous outbreaks of infectious salmon anaemia (ISA), a liver-dissolving virus. The escape of such sick or farmed 'super-fish' into the wild will affect the indigenous population, particularly so with the number of escapes ever-increasing. The government admits that some 400,000 farmed fish have gone loose. The salmon farming industry is not efficiently controlled and unless this changes, more and more of Scotland's living rivers will soon be gone forever.



ENVIRONMENTAL IMAGES

Wester Ross Fisheries Trust, 'any river under three miles long flowing into a sea loch with a salmon farm in it will be dead as far as migratory fish are concerned'. Intensive fish farming has knocked the life out of unprecedented numbers of rivers.

As *The Ecologist* has reported, John Home Robertson, Scotland's fisheries minister, sees no connection between fish farm waste and toxic algal blooms which poison shellfish. Turning a blind eye on all evidence, the ministry, for a long time, insisted that salmon farms are environmentally 'neutral'.

Meanwhile, the Highlands' output of farmed salmon increased from 400 tons in

MAKE A DIFFERENCE

Send a letter of concern to John Home Robertson MP, MSP, at The Scottish Parliament, Edinburgh EH99 1SP. Send copies to the spokesmen for fisheries of all other parties at the same address. They are M Rumbles (Liberal), J McGregor (Conservative) and A Morgan (SNP).

US SAVE THE BEAVER BROOK WATERSHED

Beaver Brook Watershed stretches across 6,000 acres of critical wildlife habitat in Clear Creek County, in the US State of Colorado. It is currently under threat of being sold for development by the city of Golden. The area is one of the last large parcels of unfragmented habitat and provides a safe corridor for wildlife between Noble and Elk Meadows and the Mt Evans Wilderness Area. The Clear Creek County commissioners, who have been trying to prevent the sale, are currently being sued by the city of Golden. The city is attacking the commissioners over zoning

changes that the county made in effort to keep the land from being subdivided into residential lots.

More recently, Corey Wong, the Clear Creek District Ranger submitted a proposal to acquire Beaver Brook Watershed through funding from the Land and Water Conservation Fund, which was created by Congress for the purpose of acquiring key lands for conservation. It is important to pressure both Congressional Members and the Forest Service to save the Beaver Brook Watershed from development.

MAKE A DIFFERENCE

Write to Mike Dombeck, USDA, Forest Service, PO Box 96090, Washington, DC 20090-6090 and send a copy to your congressional leader.

PERU OIL THREATENS PRISTINE PERU

Four years ago, the Peruvian government granted ExxonMobil the right to explore the 350,000-acre Candamo Valley and surrounding region for oil and natural gas.

The valley, surrounded by steep mountains, is one of the Amazon's least spoiled treasures. So far, ExxonMobil has done only preliminary work, but research results indicate that the valley may hold very large reserves of natural gas.

Environmentalists and a majority of Peruvians had hoped that ExxonMobil would give up its claims so that the Candamo valley could be incorporated into the nearby Bahuaja-Sonene National Park. However, ExxonMobil has retained its claim to explore for oil and gas in the valley.

In the event that it decides to develop the area, there will be serious risks to the health and long-term survival of the region which is home to jaguars, pumas, tapirs and many more endangered species. The valley is a complex, healthy and still intact ecosystem - 'a complete Amazon in miniature,' according to the biologists. Oil and gas development would forever change this and similar projects have already devastated too many unique areas in South America. In addition, the pollution of air, water, soil and massive deforestation would affect areas beyond the valley.

The fate of Candamo is currently in the hands of ExxonMobil, whose public relations office claims that the company fully understands the importance of the area.

However, the company's decision not to let slide its claim to explore for oil and gas indicates that it is still considering development of the region.

MAKE A DIFFERENCE

Please write friendly letters to Lee R Raymond, Chairman, Exxon-Mobil Corporation, 5959 Las Colinas Boulevard, Irving/Texas 75039 and urge him not to proceed with any gas or oil development in the Candamo Valley.

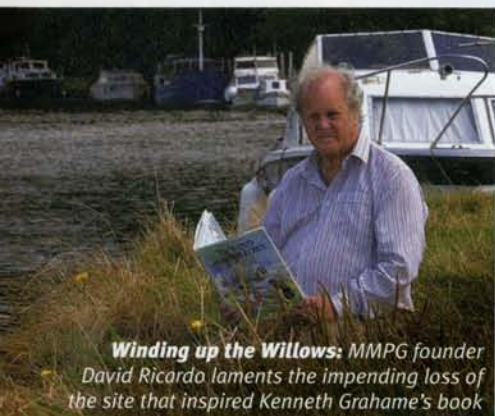
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CAMPAIGNS DIARY

UK PROTECT MARSH MEADOW

Marsh Meadow in Cookham, Berkshire, is one of those unspoilt places that epitomises the very essence of the southern English landscape. Here, the eye still meets unbroken views of lush woodlands sweeping down to the river Thames, surrounded by open river-side meadows. It is a small piece of paradise; a paradise soon to be lost.

The Royal Borough of Windsor & Maidenhead is planning to build a 90-space



Winding up the Willows: MMPG founder David Ricardo laments the impending loss of the site that inspired Kenneth Grahame's book

car park on Marsh Meadow. The planned car park will be accessed across the middle of Cookham Moor – a Conservation Area owned by the National Trust – effectively cutting it into two. If this happens, the entrance road across the moor to the car park will be the public's right of way to Marsh Meadow. In addition, under the Town and Planning Act all of Marsh Meadow will consequently be open for up to 28 days a year for potential commercialisation; ie vehicle parking.

Over 1,300 locals have signed a petition against the car park, asking the council to think again before they desecrate this stretch of land. The Marsh Meadow Protection Group (MMPG) believes that the Council should be protecting the Green Belt and not making proposals to destroy it forever.

MAKE A DIFFERENCE

Write to Roger Tuffly, Head of Planning and Environment, Royal Borough of Windsor & Maidenhead, Town Hall, St Ives Road, Maidenhead SL6 1RF or email roger.tuffly@rbwm.go.uk. Write also to Charles Drury, General Director, National Trust, 36 Queen Anne's Gate, London SW1H 9AS and ask him to oppose this development. All planning details can be found on www.cookham.com

1-20 October 2000

Totnes, Devon, UK.

Community, Sustainability and Globalisation

Speakers include Wendell Berry, Helena Norberg-Hodge and Vandana Shiva.

Visit www.gn.apc.org/schumachercollege/ or call +44 (0) 1803 865934

5 October 2000

London, UK.

New Thinking – New Solutions

5th Greenpeace Business Annual Conference

Speakers include Stephen Byers, Amory Lovins and Malcolm Walker.

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6-8 October 2000

Redwood City, CA, USA.

Taking back our Food and Farms

Conference on pesticide reform, environmental health, genetic engineering and corporate influence on agriculture.

Visit www.panna.org/octConf.html or call +1 415 981 6205

16-18 October 2000

Lisbon, Portugal.

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Conflicting demands on water, air and land resources in a changing global environment.

Visit www.elsevier.nl/locate/iep2000 or call +31 20 485 3757

16-20 October 2000

San José, Costa Rica.

FAO Expert Consultation on Forest Change

Visit www.fao.org/forestry/Forestry.htm or call +39 065 705 3596

16-20 October 2000

Isle of Skye, Scotland.

Small Islands in the Third Millennium –

Sharing Solutions to Common Problems

Issues will cover biodiversity, renewable energy, waste minimisation, fisheries, tourism and conservation. Visit www.islandstudies.org or call +44 (0) 147 861 2898

17-19 October 2000

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F-Cells Week

Advancing potentials of the domestic and portable fuel cell market. Visit www.iqpc.com or call +44 (0) 2074307300

20-22 October 2000

San Rafael, CA, USA.

Bioneers 2000 Conference

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21 October 2000

London, UK.

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Christian Ecology Link Conference. Speakers include Michael Meacher MP, Charles Secrett and Michael Northcott.

Visit www.christian-ecology.org.uk or call +44 (0) 1423 871616

21 October 2000

All over UK.

Apple Day

Augmenting awareness of the decreasing variety of British apples and loss of orchards as well as collecting signatures for the Organic Targets Bill. For an event near you, visit www.commonground.org.uk or call +44 (0) 207 267 2144

23-27 October 2000

Berlin, Germany.

Berlin Water 2000 Congress

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28-29 October 2000

Edinburgh, UK

'Globalisation: A Challenge to Health Equality?'

3rd Medical Students International Network (MedSIN) National Conference. Visit www.medsin.org or call +44 (0) 131 447 7737

31 October-2 November 2000

Sarasota, Florida

3rd William and Lenore Mote International Symposium in Fisheries Ecology: Targets, Thresholds, and the Burden of Proof in Fisheries Management

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31 October-11 November 2000

Ecuadorian Amazon, Ecuador.

'Nature as Teacher, Indigenous Wisdom and Rainforest Conservation'

Journey into the heart of the Ecuadorian Rainforest and the Secoya People. Organised by Pablo Amaringo and the California Institute of Integral Studies. Visit www.experimentals.org or call +1 510 235 4313

World-Wise Web: The five best online bookmarks

www.wtowatch.org

All you need to know about the WTO and the complex web of people, interests and deals around it.

<http://webackbiotech.com>

Novartis has launched a massive campaign to counteract the growing power of the anti-genetic engineering movement.

www.newdream.org

Practical solutions on reducing consumption and protect the environment. Check out their current action on water.

www.globalresponse.org

An excellent global spread of campaigns for the 'hooked'.

www.heatisonline.org

An on-line update of Ross Gelbspan's authoritative book; tracking climate-related developments.

ANDAMAN ISLANDS/INDIA THE FATE OF THE JARAWAS

The Jarawa tribe of the Andaman apparently have no friends. Police, soldiers, tourists, fishermen, shop and hotel owners want them gone. But they were there long before any of their detractors.

Back in 1991, the Indian government, which administers the Andaman Islands, introduced a so-called 'Master Plan' aiming at 'civilising' the Jarawa; settling them and introducing them to 'modernity'. They largely failed. Known for their independent nature these 'negritoes' remained in their forests and out of everybody's sight. Even today, virtually no out-



siders speak their language, and little is known about them. They are nomadic hunters living in groups of 40 to 50 people. Most probably they came to live there some 70,000 years ago when sea levels were much lower and the islands were connected to Burma. Their customs, culture and origin is shrouded in mystery. During the 7th century, the Arabs and the Chinese were the first outsiders to set foot in the island.

Everything changed when in 1998, the Jarawa, which count no more than 400 members, began to come out of their forests and visit nearby villages. Nobody knows why –

but since they were 'out' they had, according to the Master Plan, to be 'controlled'. The plight of the Jarawa at the hands of the Indian government has received incredible international attention, which the Indian government now says is 'based on the erroneous presumption that this administration plans to relocate the Jarawas... neither is the administration contemplating any resettlement... nor is it doing anything to disturb the Jarawa way of life'.

The situation has been complicated by a local court case aiming at having the Jarawa forcefully resettled, claiming that 'this is high

time to make them acquainted with modern civilisation'. The case is still ongoing but has been passed on to an 'expert committee' which will decide on the future of the Jarawa. The committee will reconvene from October onwards and it is vital to pressure the relevant authorities to take the right decision and not to use the local court case to revert to the Master Plan.

Survival International believes that forcibly resettling the Jarawa is tantamount to genocide. The Jarawa have lived on the island long for enough to know what is best for them – no government has the right to impose a judgement of what is 'civilised'

or 'advanced'. The pursuit of such ideas has cost too many lives already.

MAKE A DIFFERENCE

Please write letters of concern to Mr Jual Oram, Minister of State for Welfare and Tribal Affairs, Ministry of Welfare, Shaftri Bhavan, New Delhi 110011, India or fax on +91 113384918. Please copy your letter to Survival International, 11-15 Emerald Street, London WC1N 3QL and visit www.survival-international.org

World-Wise Web: The five best campaigns

www.climatevoice.org

Help the WWF to collect signatures for the COP6 meeting on Climate Change.

www.lobauatobahn.at/english

Stop Austrian politicians building a highway through Danube Wetlands.

<http://phillyimc.org/>

Condemn police action & read about the Republican National Convention.

www.asoc.org/

Ask Nasa's Jet propulsion Laboratory not to drill into Lake Vostok.

www.nrdc.org/wildlife/habitat/nbelize.asp

Tell Fortis Inc and Duke Energy not to build a destructive dam in Belize.

UK CONTAMINATED LAND FOR SALE

The Euratom 96/29 Basic Safety Standards directive, transposed into UK law in May 2000, permits the recycling, re-use and general disposal of man-made radioactive waste so long as certain (in some cases very high) 'exemption' thresholds of activity are not exceeded. 'Exemption' was intended to apply to small amounts of material whose radioactivity was believed to be below regulatory concern.

But the government refused to implement the European Directive's Exemption threshold values, choosing to retain the UK level of 400 Becquerels per kilogram which defined nuclear waste under the Radioactive Substances Act 1993.

However, the 400 Becquerels per kilogram exemption level has now been applied as a blanket definition for disposing of the enormous quantities of radioactivity from nuclear power stations. The Statutory Instrument 1002/1985 Substances of Low Activity Exemption Order (SoLa) is now being applied, not only to the 'exemption' concept but to the dismantling and disposal of whole nuclear sites. This nuclear site disposal is called 'Clearance' in the jargon of the Euratom Directive, and was intended to be separately assessed.

This is not a hypothetical danger. The

Atomic Energy Authority at Harwell in Oxfordshire recently obtained permission to sell off a large piece of contaminated land for houses. It did so by arguing that so long as the level of radioactivity in the ground was below 1100Bq/kg, children living there would be safe. This 1100Bq was obtained by adding the level of contamination on the site (700Bq, which they decided was 'natural background') to the 400Bq 'allowed' by the new transposed Euratom law. If this reasoning is permitted the entire collection of nuclear power stations can be diluted into the farmland of England and still kept within the law. The problem is that 400Bq/kg is a concentration: there is no control over total quantity.

MAKE A DIFFERENCE

Write to the Environment Minister Michael Meacher, Constituency Office: 110 Union Street, Oldham, OL1 1DU, and ask why the SoLa 'Exemption' level of 400Bq/kg is being applied to the 'clearance' of the enormous quantities in nuclear sites. Please copy your letters to your local MP and to the Low Level Radiation Campaign, Ammondale, Spa Road, Llandrindod Wells, Powys LD1 5EY UK – email bramhall@llrc.org.

MALAYSIA LOGGING ROLLS ON

The semi-settled tribal Penan people of Sarawak have been fighting logging companies for more than 20 years. To them, their timber-rich forest is more than a home; it is a life-support system upon which their very lives and existence depends. Due to increased logging, the Penan have recently renewed their protesting efforts and erected wooden barricades to stop trucks from freely transporting and extracting timber throughout the area. In order to access the forests, logging companies have been carving roads deeper and deeper into the area, blindly bulldozing their way through villages, graveyards and settlements, claiming these roads as their property.

The Penan, known to be a peace-loving community, are the most ancient people known to live in Sarawak. Their land rights have continuously been ignored by both the logging companies and government authorities. So far, none of the community's applications for turning what remains of their forests into reserves have been approved. When applicants did receive a reply, they were often told that their lands had already

been licensed out. Since no-one will recognise and protect their rights, the Penan will continue with the blockade until they receive assurances from higher authorities.

The environmental effects of careless logging have led to soil erosion, polluted rivers, siltation and severe flooding. Much of the wildlife has gone forever or fled deeper and deeper into what remains of the forests. Although the government at one point did try to 'streamline' the Penan into a more modern way of life, many communities have remained suspicious of development imposed from outside. These will continue to suffer unless their land rights are recognised and intense logging is being brought to a halt.

MAKE A DIFFERENCE

Read the best and most recent study on the effects of logging on the Penan on www.rengah.c2o.org. The Bruno Manser Fund, which has been supporting the Penan's plight for many years, has started a letter campaign which can be downloaded on www.bmf.ch/ or call +41 61 261 94 74.

US BLACK DAY FOR THE DINÉ

The Diné (Navajo) people have lived on the Black Mesa, Grand Canyon, for at least 400 years. In 1951, the richest known deposit of coal in the US was found in the area. Shortly afterwards, a lease with Peabody Coal, the world's largest coal company, was signed. Here the company operates the world's largest coal strip-mining operation. Once the Diné realised what strip-mining was doing to their land, they filed a law suit, which was rejected. Then in 1970, the only slurry line in the US began pumping and consequently polluted what was the area's sole drinking water source. Today, the springs have all dried up and the water table is rapidly falling. Fouled water now runs through a pipeline and the Diné spend enormous amounts of time hauling drinking water from as far away as 20 miles.

In 1996, Congress passed the Navajo-Hopi Settlement Act, which required all remaining Diné to either sign a 75-year lease or be forcibly evicted by February 2000. The Bill passed the Senate and House without debate and shortly after was signed into law by Clinton. With their remedies in US courts seemingly exhausted, the Diné turned to the UN. This resulted in an investigation which, in February this year, prompted the European Parliament to pass an unprecedented 'Urgency Resolution', condemning the forced relocation of the Diné, the violation of their human rights and land rights and the environmental destruction being wrought on the land and people of the Black Mesa.

Since 1 February 2000, all Diné refusing to sign the lease have been handed 'eviction notices'. Meanwhile the Bureau of Indian Affairs is speeding up the process by taking away the Diné's livestock. Left with so little to live and hope for, it may only be a matter of time before these people and their land disappear without a trace.

MAKE A DIFFERENCE

Write to President Clinton and Vice President Gore at The White House, Washington DC 20500 USA. Tell them why and under what conditions the Diné should be allowed to stay on their lands. Write a letter to Kofi Annan, Secretary-General, United Nations, 8-14 avenue de la Paix, CH-20011 Geneva. Ask for a statement in support of the cause of the Diné. Please send copies of your letters to Carol Halberstadt, PO Box 543, Newton, MA 02456, USA or email carol@migrations.com. For more information visit www.migrations.com

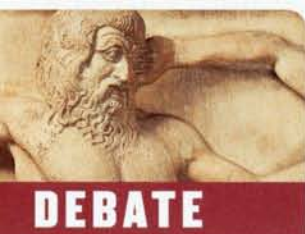


You're going to see a lot more of solar power. As global warming accelerates and our energy demands continue to rise, we have to adopt cleaner, more sustainable sources of energy, before it's too late. The latest technology finally makes domestic solar power a practical and affordable reality even in grey old UK. Add value to your home and lead the way into an era of clean energy.

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SOLAR
CENTURY



DEBATE

SHOULD WE HAVE

LEADING CONSERVATIONISTS ROBIN PAGE AND



Robin Page is a Cambridgeshire farmer and a writer on countryside issues. He is well-known as a presenter of BBC TV's *One Man And His Dog*, and founder of the *Countryside Restoration Trust*.

Dear Marion,

Apparently, our countryside-illiterate government is about to increase the amount of public access over vast tracts of land, amounting to something like 7,000 square miles. This puzzles me for a number of reasons. Let me start in this first letter by addressing just one of them: the great threat to our native wildlife which this will pose.

As somebody who has been fighting for the countryside and conservation for years, I have never had any problems about responsible access. I have walked in woodland and wet meadow, on moorland and mountain, and I have never had any problems whatsoever. I have always walked alone or with one or two companions, and I have considered it a privilege to watch fox cubs play, otters fish, salmon leap and blackcock lek without causing disturbance to wildlife or landowner.

When I was young in my part of Cambridgeshire, I frequently met other people walking over fields and by rivers; again, there were few problems. Gates were shut, farm animals were respected and there was a knowledge of wildlife that created no threat to bird or beast.

Since then, things have changed. Now, when I walk the fields around our small Cambridgeshire farm, I usually see nobody. When I do meet others, they are usually not 'walking'; they are 'exercising' their dogs, off leads and out of control, and they see fields as dog latrines and footpaths as doggie exercise areas. The only other people I see are joggers.

Society has changed, too. In the early days, those walking would often have links with the land; they had relatives working on estates or farms, and many had considerable knowledge of wildlife and the seasons. Now we are a largely urbanised society, and the country roots of most people have been severed. That change can be seen in all sections of the community; at school most children, even most 'country' children, cannot name six wild flowers or 12 birds; while 'incomers' to villages import their suburban values and try to impose them on the rural communities into which they descend.

Marion, what people like you are saying is that people who have no knowledge or understanding of the countryside should have open and uncontrolled access to it. This really does amount to the most astonishing irresponsibility. As chairman of the Countryside Restoration Trust, I am desperate for people to go into the countryside; for children to play in

streams, pick wild flowers and listen to the larks singing. But before they can enjoy all these things, they must learn and understand about wildlife and the countryside, so that they can behave in a responsible and appreciative way.

I find it astonishing that areas to be opened up for access under the government's proposals include moorland, heath, down and mountain, and that additional extras such as riversides and woodlands are already being demanded. These are among the most vulnerable, fragile and threatened habitats in Britain. For instance, moorland in early spring and summer is a place vital for the successful breeding of some of our most endangered and declining birds. It is the home of the lapwing, curlew, golden plover, dunlin and red grouse. Are these wonderful birds worth sacrificing on the altar of open access and the right to roam?

Strangely, it would seem that such access would also contravene the Wildlife and Countryside Act. One bill – a Right to Roam bill – would give access, while another is saying that disturbance of endangered species is illegal. It is ironic that allowing people to 'roam' on intensive farmland could give the greatest amount of access with the least environmental damage – as great swathes of industrialised farming land have nothing left to damage.

The whole concept of waterside walks is also astonishing. I do not even walk along the length of brook bank that crosses our farm – with otters making a comeback, quiet areas are needed, not highways for rambles. You believe that people have a 'right' to roam, but in the breeding season those same people put at risk, through disturbance, kingfishers, otters, willow warblers, etc. Ignorance is no defence for keeping a kingfisher off her nest while people picnic and throw frisbees.

In the Pennines, a gamekeeper has shown me the dangers of roaming without supervision. In the spring, when lapwings were incubating, he took me to one of their most important breeding areas. A rambler had left the footpath for a picnic, despite signs saying 'Please remain on the footpath'. He approached the rambler and politely pointed out the two female lapwings he had forced off their nests, exposing them to cold and to predators. The rambler was equally polite, apologised and went back to the path. 'That was good', the gamekeeper informed me. 'Nine times out of 10, I would just have got a stream of abuse.'

The countryside is much too valuable, and our wildlife is far too threatened, to allow open access and a general right to roam. What is needed is controlled access, giving responsibility and supervision, especially during the spring and summer.

And this is just to address the issue of how much

NO

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A RIGHT TO ROAM?

MARION SHOARD MARCH TO THEIR CORNERS.

damage will be done to wildlife by the introduction of a legal right to roam – I have not even begun to address the economic and social issues involved, though I will do so in my future letters.

Robin Page

Dear Robin,

Any human activity in any part of the environment may obviously impact on wildlife. When you were so responsibly watching fox cubs play, you cannot be sure that you too weren't keeping a bird off her nest. We have to keep a sense of proportion about this, and the fact is that walking in the countryside is, of all human activities, one of the least disturbing to species. Farming has devastated our fauna and flora, wiping out three-quarters of our skylarks, for example, in the last 25 years. A fox hunt crashing through a wood is about as disturbing a prospect for wild creatures as can be imagined. Walkers, however irresponsible, would find it hard to compete with the damage caused by activities such as these.

Where public access to the countryside already exists, it usually proves compatible enough with wildlife. The New Forest, for example, with total public access, remains one of our most important wildlife areas. Wildlife organisations nowadays acknowledge the harmlessness of walkers by deliberately encouraging them to visit their reserves.

There are of course nonetheless circumstances in which walkers could cause unacceptable damage to wildlife. As vice-president of the British Association of Nature Conservationists, I am keen to see that this doesn't occur, but so are most of those currently advocating greater public access. As with any other comparable provision, a right of access must be subject to exceptions. I completely agree with you that the position of ground-nesting moorland birds, for example, should be protected. So, however, does the government: it has provided for the suspension of its new right of access to moorland, mountain, heath, down and common land in England and Wales where nature conservation needs require this. Experience in other countries where a right of public access already exists shows that such provisions ensure that the protection of wildlife can go hand in hand with public access.

Sadly, I believe that some of those who resent the encroachment of the rest of the population on what has been their private fiefdom use a supposed threat to our wildlife as cover for the desire to protect their own privilege. Some of the people using the new right to roam may indeed be unable to identify many wild flowers or birds, but most of them will proceed with goodwill and do no real harm. This is more than can always be said for countrymen who have claimed to

be the custodians of our countryside in the past, but have not only exterminated wildlife indiscriminately to increase profits from agriculture but have persecuted threatened species they suspected of taking game.

Our wild creatures can co-exist happily enough with human beings walking in the countryside. If some of these walkers might benefit from more understanding of our wildlife, let them gain more understanding by actually getting a sniff of it.

At present they are largely prevented from doing so by the efforts landowners are making to keep them out, usually without even bothering to pretend they are doing this to protect wildlife. A survey conducted by Norfolk County Council, across the border from you, revealed that less than 5 per cent of that county by area was available for the free movement of the public when it was carried out in 1991. Most people have to rely for public access to most of the countryside on the public footpath network which (splendid though it is) has been shaped by historical accident rather than current needs. Continuing intensification of agriculture, more pheasant shooting in the woods, increasing concentration on privacy and security and a trend towards charges for access are tending to make access more rather than less difficult.

Our countryside remains disfigured by barbed wire, locked gates and threatening signs. Yet in the past people moved freely along field edges, farm and forest paths and over fields used for grazing, without creating any apparent problems for wildlife. Even the apparently open spaces of our hills and mountains can still be forbidden to walkers. Farmers in County Fermanagh place advertisements in their local paper warning trespassers to keep off their moors. Our rivers and streams remain largely unknown to most of us because their banks are so often out of bounds.

Yet more and more people long to escape the stresses of urban life to enjoy the same kind of rural refreshment which you so obviously appreciate yourself.

Do you really believe it is right that ordinary families seeking only to walk in the countryside should have to do so in fear of an ugly confrontation with a quite possibly armed man, bawling at them to leave if they wish to explore those countless parts of their homeland where they are classed as trespassers?

This all-too-real prospect does not really provide ❏



Marion Shoard writes and lectures on rural land-use issues, and teaches countryside planning at University College, London. Her most recent books are *This Land is Our Land* and *A Right to Roam*.

YES



'If your cocktail of prejudice and misinformation is the future for conservation then I think those of us engaged in practical conservation might just as well give up now.'

Robin Page

NO

the protection our wildlife needs. That depends much more on a full-blooded programme of action to conserve its ever-more-threatened habitat. And that depends on the political support of the community at large. The best way to generate that is to bring as many people as possible into as close as possible contact with the wildlife which depends on their enthusiastic support.

Marion Shoard

Dear Marion,

Thank you for your letter. To be truthful, I found it quite disturbing. Recently, I wrote that in a few years' time the wildlife of this country would be destroyed by deskbound conservationists with degrees in 'ecology' and 'environmental studies', but with no practical knowledge of wildlife. Now comes your letter, in which you say you are vice-president of the British Association of Nature Conservationists. It has made me very depressed; if your cocktail of prejudice and misinformation is the future for conservation then I think those of us engaged in practical conservation might just as well give up now.

In almost every paragraph there are either errors or distortions. You ask how I know I don't keep birds off their nests when I watch fox cubs. The answer is simple – because I know when and where birds nest. The other day it took me half a minute to show a visitor the nest of a 'scribbling lark'; the local country name for the yellowhammer. She was amazed, her interest was stimulated and the bird was not upset.

You say fox hunting causes disturbance. Don't you realise that fox hunting takes place in the autumn and winter, when I would have no problem with uncontrolled access in the countryside? It is spring and summer that worry me, when species are vulnerable and when fox hunting does not take place. It is ironic that fox hunting gives controlled access to many thousands of people during the winter; with your views on the right to roam, I am surprised you do not support it.

You blame farmers for the intensification of agriculture and the destruction of wildlife. You seem to have forgotten that agricultural intensification was driven by the Common Agricultural Policy and by governments. You mention 'threatened species suspected of taking game'. The hen harrier and many other birds of prey were persecuted long before game shooting started, because in the case of the hen harrier, it does exactly that – it harries hens and their chicks. In any case what is wrong with population management? Nobody seems to mind when deer are shot to protect rare plants. So why cannot hen harriers, sparrowhawks and goshawks be controlled to protect lapwings, curlews, golden plovers and, yes, pheasants and grouse?

The big giveaway in your letter is your mention of private 'fiefdoms', and the bizarre picture you paint of terrified ramblers being threatened by ranting rustics waving guns. From this caricature, and your whole tone, I believe that the right to roam and the welfare

of wildlife and people take second place in your philosophy to your almost Marxist view of land ownership. Your grouse is a political one about the private ownership of land – you want land nationalisation; common land for the common people. If only you would have the honesty to spell it out, and not hide behind the right to roam.

The right to roam is not about ownership. Whether land is owned by the state, a crofter, or a lord it still has to be managed in a responsible and a sustainable way. The countryside is not a theme park for city dwellers or deskbound ecologists with axes to grind, it is a living entity in which people work to produce food; in which communities are struggling to survive and where wildlife and biodiversity must be both encouraged and protected. Your vision of access, ramblers, riverside walks and landowners downgraded to park keepers is naïve and puts the whole of our rural culture and our wildlife at risk.

Robin Page

Dear Robin,

I'm sorry to have disturbed and depressed you, but cheer up, a right to roam isn't the end of the world. Certainly I'm sure that our wildlife has less to fear from walkers and 'deskbound conservationists' than it has from 'those of us engaged in practical conservation', if by that you mean your fellow farmers.

On farmland, the numbers of song thrushes fell by 66 per cent between 1972 and 1996, of bullfinches by 62 per cent, of skylarks by 75 per cent, of linnets by 40 per cent, of spotted flycatchers by 78 per cent and of lapwings by 46 per cent. It's not only birds which are suffering: butterflies and frogs, beetles and dormice have been devastated as well. The agricultural practices which have brought about these effects have not been dictated by the British government or the European Union. They have been adopted by farmers determined to increase their incomes with little concern for the damage they must have known they were doing to wildlife and its habitat.

It is the job of 'deskbound conservationists' to form overall assessments of the threats actually confronting wildlife. You cannot blame them for concluding that in comparison with damage of the kind being caused by factors such as agricultural intensification, any conceivable damage caused by walkers hardly registers on the scale.

Conservationists have also noticed that the protection of wildlife needs the full-hearted support of the whole community if it is to succeed. This is best secured by enabling people to appreciate the glories of our wildlife at first hand. A right of public access to the countryside is one means of helping to bring this about. The more people get to know and love our wildlife, the more they will not just support, but positively insist upon, its conservation. This effect is likely to be far more significant for the long-term well-being of our wildlife than the odd bit of disturbance that some walkers may cause.

You suggest that I have some kind of secret grudge

against private landownership. I have nothing against landownership exercised with proper respect for the legitimate interests of other citizens in what constitutes the environment of us all. However, I do have an objection completely unconcealed – to the ownership of land being regarded as absolute, in the way in which ownership of a piece of furniture or jewellery is considered absolute.

Private landowners' rights in their holdings are not the only rights in them demanding recognition. The rest of the community is entitled to a stake as well, as has long been recognised in, for example, our arrangements for compulsory purchase, planning controls and pollution regulations. The right to roam is another expression of this communal interest. If that turns the countryside into what you see as a theme park, and you don't like it, that is your problem. The countryside is not only the property of those who happen to be farming it, often to produce unwanted food which has to be bought up and destroyed at taxpayers' expense. It is also a theatre for recreation and a repository of wildlife, landscape attractions, archaeological remains and much else of importance to very many other people.

Managing the new right will pose problems but these are unlikely to be insuperable. Public rights of access to countryside are well established in Denmark, Sweden, Germany, Switzerland and other countries not unlike Britain. I have studied the operation of these rights in these countries and been unable to uncover any significant ongoing problems in any of them. In these countries, sophisticated measures have been devised to safeguard wildlife even where land comes under special recreation pressure as a result of access rights. These measures work, and similar measures would work here.

Marion Shoard

Dear Marion,

Here is a simple question for you: If you call the tail of a horse a leg, how many legs has a horse got? The answer is four; however much you call the tail a leg, it is still a tail. Similarly, however much in your politically correct dreams you see farmers and landowners as part of an evil, money-grabbing squirearchy, the truth is that the devastation caused by modern agriculture on the environment has all been CAP- and subsidy-driven. Our farmers have simply been doing what Brussels has told them to do. Blame the NFU certainly, but not the individual farmers.

Sadly, for many years only a few of us were criticising the system and the deskbound conservation establishment simply sat back and did nothing. As long ago as 1980 the late Gordon Beningfield and myself tried to get the RSPB involved in the general countryside. It was only because the 'deskbound conservationists' remained deskbound that we were eventually driven to form the Countryside Restoration Trust – to put the culture (and lark song) back into agriculture.

It is ironic that you mention that 'the protection of wildlife needs the full-hearted support of the whole

community'. That is exactly what happens on Exmoor with the management of the red deer herd – so now deskbound politicians want to ban deer hunting and break that communal protection.

Next door to Exmoor, Dartmoor provides the best example of what damage open access causes, when that access is at the wrong time of the year. With open access, and the Ten Tors walk at a crucial time of the year for breeding birds, the Dartmoor populations of blackcock, red grouse, curlew, golden plover, dunlin and lapwing have either been wiped out completely or they hang on by a whisker. If you believe that the open access policy of Dartmoor has been a great success, then with the golden plover and the curlew, I must agree to differ. Sadly the right to roam represents nothing more than a victory for theme park Britain, and class war Britain, and yet another defeat for traditional country people, the countryside and its wildlife.

Robin Page

Dear Robin,

The European Union has not ordered farmers to destroy wildlife. It has created a reward system which farmers can exploit as they see fit. Where they put their own interests before the environment they must accept responsibility for this just as walkers must.

On Dartmoor, the populations of the birds you mention have indeed fallen, but insofar as human agency is responsible for this, it is farmers, not walkers, who are to blame. The black grouse (or blackcock) has actually become extinct on Dartmoor. According to English Nature, the reasons are the expansion and intensification of agriculture, which have destroyed the birds' habitat. Red grouse numbers on Dartmoor have halved over the last 20 years. The main problem facing this species is the replacement of heather by grass, as a result of the overstocking of sheep.

Dunlin are also in trouble on the moor, but their problem is probably climatic: global warming seems to be causing Dartmoor to dry out and thus deprive these birds of the swampy surfaces they need. Curlew and lapwing are probably being hit by the same trend. The tiny remaining population of golden plover, on the other hand, probably has most to fear from inappropriate burning and stock grazing on moorland bogs.

Of course, if a walker happened to stumble on the nest of one of the few remaining pairs of a species which has been decimated by farming practices, damage could result. The Countryside Bill and Rights of Way Bill would allow walking on stretches of moorland in springtime to be banned on the advice of English Nature or the Countryside Council for Wales.

Thus, far from being a defeat for the countryside and its wildlife, the bill will, if it goes through, be of enormous benefit to them. If 'traditional country folk' are really as disturbed about it as you are, they are in for a pleasant surprise.

Yours in the hope that facts may yet conquer prejudice.

Marion Shoard

'The right to roam is an expression of communal interest. If that turns the countryside into what you see as a theme park, and you don't like it, that is your problem.'

Marion Shoard

YES



YOUR MONEY

Britain's cancer charities are a multi-million pound industry. But they are no nearer to 'curing' cancer than they were half a century ago. Quite the opposite – much of their time and money is spent avoiding awkward questions about what causes the disease.

Martin J Walker investigates.

Everybody knows what causes cancer. Bad diet; too much sunlight; cigarettes; faulty genes – and, of course, that virus which crops up near nuclear power installations. Modern science has told us so, and now it must tell us how it can be cured. But we are getting there. Diligent research, largely carried out by Britain's cancer charities, means that a cure for cancer is probably now nearer than ever.

That, at least, is one side of the cancer story; the side you can hear from establishment scientists, drugs companies and media science correspondents. But the other side is hidden from history and the public record. For, in truth, we do not know what the main causes of cancer are, nor why the disease is escalating. Apart from the continual propaganda about cigarettes, there is no public discourse about the chemical or environmental causes of cancer. And it is unlikely that the public will ever be informed about them while cancer research in Britain is dominated by a cabal of unaccountable doctors, scientists and surgeons – a 'cancer club' which garners some of its funding and much of its philosophy from an industrial infrastructure which independent scientists believe is itself the cause of rising cancer rates.

For cancer 'research' in Britain is a misnomer. As science and medicine have become increasingly interlocked with industry, the motivation, initiative and funding for preventative cancer research has all but dried up. Throughout the post-war years in Britain, industry, government and science have tried to tackle the cancer epidemic by searching for miracle cures rather than investigating causes; by playing with gene sequencers rather than looking at environmental pollution; and by taking industry's money rather than looking at its record. The conclusion today is inescapable: Britain's cancer research charities are part of the problem, not the solution.

THE 'CANCER ESTABLISHMENT'

There are over 600 cancer charities in the UK, but the three big players – the heart of the 'cancer establishment' – are the Imperial Cancer Research Fund (ICRF), the Cancer Research Campaign (CRC) and the Institute of Cancer Research (ICR). All are involved in the United Kingdom Co-ordinating Committee on Cancer Research (UKCCR).

The philosophical and scientific approach of this cancer establishment is frighteningly narrow. Its interest in researching environmental or chemical causes of cancer appears negligible. The great weight of its research is consumed with the deeply fashionable idea that unravelling the human genome will provide the solution to all human illness, cancer included – despite the fact that, on the highest estimates, no more than 5 per cent of cancers are considered to be hereditary. (*See page 65).

These three charities preserve a near-monopoly over the whole field of cancer. They determine the public perception of what cancer is and what can be done about it. Yet all are essentially unaccountable, steeped in conservatism and the privilege which class and power have bestowed upon the top echelons of the

AND YOUR LIFE?

British medical profession. Between them, they have been gradually and intermittently losing the war against many cancers for almost a century.

THE IMPERIAL CANCER RESEARCH FUND

The Imperial Cancer Relief Fund was launched in 1902 with a £30,000 appeal – a ‘scheme for investigating the cause, prevention and treatment of cancer’ – by an independent group of physicians from the Royal College of Surgeons and the Royal College of Physicians. From the 1920s onward, the ICRF became essentially a public company and, in 1939, a charity.

The original London laboratory of the ICRF was staffed until the late 1950s by only nine scientists, whose annual expenditure in 1950 was around £41,000. After the building of a £2m laboratory in Lincoln’s Inn Fields in 1963, though, the Fund grew rapidly. By the mid-1990s, it was receiving around £59m annually in donations, spending £50m on research and £10.5m on administration. Its assets, in investments, mortgages and property ownership stood at almost £90m.³ Today the ICRF boasts over 40 research groups based at Lincoln’s Inn Fields, a laboratory in Hertfordshire which houses 10 research groups and an additional 35 clinical units and research groups based in National Health Hospitals and Universities around the country. It employs over 1,000 scientists, doctors and technicians. In the year 1996-97, it spent over £56m on research.

An article in the *Sunday People* in the weeks after the opening of the Lincoln’s Inn Fields laboratory was a foretaste both of the kind of tame journalism it would attract and the fostering of public guilt that was to characterise the ICRF over the next three decades. The writer estimated that the new laboratories would cost £700,000 a year to run, leaving a £620,000 shortfall for the Fund. The money to run the new cancer research laboratory could not, the article stated, come from the government. If it did, ‘the State would want to keep a strict eye to see how its money was being spent... the scientists themselves do not want this’. The paper then exhorted readers to send money to help the Fund ‘beat cancer’ within ten years – ‘or even less’; money which could only come ‘from you and me and the chap next door’.

The money duly came from the public’s purses and wallets, as it has done ever since. After all, we all want to help ‘beat cancer’. But how well has the ICRF done in that fight? According to its own fact sheet, *Imperial Cancer Research Fund Past and Present*, the Fund does not consider preventative research or trials of carcinogenic chemicals to be a priority. Of the 110 units, departments and laboratories cited in the ICRF 1998 Scientific Report, not one deals with chemical or environmental carcinogens and only three look at preventative issues.

Why should this be? As with all the major cancer charities, the answer has to do with money – and, more specifically, the question of who funds the Fund, which is explored later in this article.

THE INSTITUTE OF CANCER RESEARCH

The Institute of Cancer Research (ICR) is an Associate Institute of the University of London, linked to the Royal Marsden NHS Trust. The Institute is not a charity, and so for a long time it was unable to raise funds in the same way as the ICRF and the CRC. In 1991, however, it found a way around this, by setting up its own charity, Breakthrough Breast Cancer. By 1998, the charity had raised over £15m, which it spent building the Toby Robins Breast Cancer Research Centre at Sutton in Surrey.

Breakthrough is a different kind of cancer charity. Apparently popular, accessible and trendy, from the beginning it had close ties to the fashion and cosmetics industry (its biggest campaign was sponsored by Avon cosmetics), with very public support from models, actors and pop stars. This superficial populism makes no difference to its approach, though – it does exactly the same work as the other cancer charities, conducting no significant research into environmental or chemical causes of breast cancer. More than that, Breakthrough provides a public face for major drugs companies to sell their own approach to cancer treatment.

The setting up of Breakthrough solved more than funding problems for the ICR. When it gained a popular base it also gained trial subjects for the ongoing trials which the ICR was carrying out with the drug tamoxifen. Breakthrough’s main drugs company sponsor is Zeneca, the pharmaceutical breakaway from ICI which developed tamoxifen. Breakthrough provided Zeneca with access to the House of Commons, when the charity provided a secretary to the All Party

Parliamentary Group on Breast Cancer, a group composed solely of Members of Parliament. Through them, Breakthrough is able to control breast cancer information in parliament. This strategy ensures, as intended, that the All Party Parliamentary Group focuses on screening and treatment of cancer while ignoring its environmental or chemical causes.

THE CANCER RESEARCH CAMPAIGN

The British Empire Cancer Campaign, launched in 1923, became the Cancer Research Campaign (CRC) in 1980. Although smaller than the ICRF, by the mid-1990s, the CRC had an annual income from donations of £59m, a

research allocation of £64.7m and assets of £25m.⁴

Professor Gordon McVie, current director-general of the CRC, is a major cancer research apparatchik, and one of the two key players in the cancer research industry over the last two decades. McVie is probably best known for his absurd attempts to seduce children into eating vegetables. After Medical Research Council studies revealed that a diet rich in vegetables might reduce cancer rates, Professor McVie commissioned the Iceland Group to come up with brightly coloured or interestingly flavoured vegetables. In April 1997, cheese-and-onion flavoured cauliflower, chocolate coated carrots, pizza flavoured sweet-corn and peas tasting like baked beans hit the streets. Sales plummeted and Iceland soon withdrew the delicacies from its shelves. McVie came out of the affair looking distinctly silly. ❧

The Imperial Cancer Research Fund, the Cancer Research Campaign and the Institute of Cancer Research preserve a monopoly over the whole field of cancer. They determine the public perception of what it is and what can be done about it. Between them, they have been gradually and intermittently losing the war against many cancers for almost a century.

McVie's vegetable brainwave is a good model by which to assess the approach of the CRC, and the big cancer charities in general. For orthodox cancer research is often concerned with changing the nature of things in order to adjust to problems created by contemporary society, rather than going to the root of the problems.

THE UK CO-ORDINATING COMMITTEE ON CANCER RESEARCH (UKCCCR)

The UKCCCR, set up in 1984 by the CRC, the ICRF and the Medical Research Council (MRC), seems to exist to serve the interests of the most powerful established research charities. Theoretically, it is supposed to co-ordinate the work of major cancer charities. In reality, its purpose seems to be to endorse cheques garnered by the big charities from mainly industrial funders.

The UKCCCR has around 15 main sub-committees, almost all of which are concerned with running clinical trials of various drugs produced by the pharmaceutical companies which fund them. Member organisations earmark funds received to be used under a sub-committee of the UKCCCR. In turn the UKCCCR lends its name to research for which the ICRF, the CRC and the ICR have received money. In essence, the function of the UKCCCR appears to be to give credibility to research paid for by drug companies which the ICRF, CRC and ICR do not wish to be publicly or charitably associated with.

SPINNING A LINE

The power of these charities is demonstrated by how effectively they control public access to the facts about cancer. There is no independent public review of the work of the cancer charities, which allows them to present their own version of events – and they do.

In the 1960s, the Imperial Cancer Research Fund was talking of curing cancer within ten years. Almost 40 years later, in January 1999, the *Sunday Mirror* ran a typical contemporary cancer article, based upon the results of the EURO-CARE II study⁵ and a booklet published by the CRC⁶. It was headlined, 'How we're winning the war on cancer'. At the top of the article, like a supermarket price ticket, was a table: 'Stomach cancer down 40%, Cervical cancer down 20%, Lung cancer down 5%, Oesophagus cancer down 5%, Child cancer cure rate 65%, Testicular cancer cure rate 90%, Breast cancer cure rate 60%, Skin cancer cure rate 97%...' In the middle of the article was a quote from Professor Gordon McVie of the Cancer Research Campaign: 'These million people [treated for and survived cancer over the last ten years] are alive because the results of research are at long last reaching the NHS. The wealth of investigation that has been taking place is coming to fruition.'

This article was typical of the current reporting of cancer research and treatment. The approach has commonly identifiable parts; the shock troops are unverifiable statistics with no contextual moorings such as gender, age, occupation or class. While we are told that stomach cancer is 'down' 40 per cent, cervical cancer 'down' 20 per cent, lung cancer 'down' 5 per cent and oesophagus cancer 'down' 5 per cent, we are not told that any such reductions in fact have little to do with the cancer research charities. Such vacillations are governed almost entirely by lifestyle, fashion, occupational trends and carcinogenic product marketing.

Inevitably, such articles fail to tell the reader whether the cancers quoted as having rising cure rates represent a high or low percentage of overall cancer cases; nor is the reader given any idea how

many other cancers are rising while having no treatment success. In fact, only one of the cancers cited in this particular article – breast cancer – is traditionally associated with high mortality rates, and some have always been successfully 'cured' with surgery.

Finally, the argument is always neatly concluded with bald, simplified assertions about 'prevention': too much sun, sex, cigarettes and a poor diet. Taken as a whole, this approach to propaganda avoids any reference to air pollution, chemical food additives, pesticides, alcohol or any occupational carcinogens whatsoever – into which research is rarely if ever conducted by these organisations. They have dumbed-down the debate on prevention and stifled the debate on causes.

In June 1997, the ICRF and the CRC scrambled to attack a Macmillan Cancer Relief Report which suggested that cancer rates would go on rising into the 21st century. Such views, though, are not unusual; in fact it is usually the CRC and the ICRF which hold the minority opinion on cancer rates. In January 1980, *The Times* reported that: 'More than £25 million a year is spent on cancer research in Britain, but the death rate from the condition has changed little since the war... Research seems to have little effect in reducing the death rate from the four big killers; cancer of the lung, large

intestines, breast and stomach'. This remains as true now as it was 20 years ago

Orthodox cancer research is often concerned with changing the nature of things in order to adjust to problems created by contemporary society, rather than going to the root of the problems.

DOING THE BUSINESS

So who funds the cancer establishment? Who funds the research of the top doctors and scientists who consistently refuse to investigate wider environmental causes of the disease? The answer goes a long way to explaining why the top cancer charities behave as they do.

IN BED WITH INDUSTRY

When asked about funding, the bigger charities point to their fundraising pie charts, which show that their major funding comes in individual covenants and donations, with only relatively minor amounts given by corporate sponsors. Yet this is to miss the point; for the big cancer research charities are steeped in an industrial culture which can serve to hide serious conflicts between the need for preventative research and the needs of industry.

Both the CRC and the ICRF hold substantial reserves – in the mid-90s the ICRF's tied assets stood at £90m – most of which is invested in industry. Even as late as the mid-90s it was revealed that the ICRF was 'inadvertently' investing in the tobacco industry. The investment portfolio of the cancer charities is not publicly accessible, and consequently it is not possible for supporters to ensure that investments have only been made in companies which are not implicit in the production of carcinogens.

The major charities also give the impression of being completely separate from the pharmaceutical industry, by processing their money through 'joint' organisations like the UKCCCR. Money for research into nuclear power and cancer, for example, given by the nuclear industry, is passed on to the UKCCCR, of which the ICRF and the CRC are partnership members. The UKCCCR has a very low public profile, and charitable contributors wishing to find out about its work or its funding often find it very difficult. Another group, the Clinical Trials Service Unit at Oxford, to which the ICRF and the British Heart Association are linked, accepts millions in research grants from pharmaceutical companies to research different therapies.

For some years now, the top charities have been competing like any other 'service provider' for corporate cash. Both the Cancer



Research Campaign and the Imperial Cancer Research Fund invest heavily in creating 'Corporate Partnerships'. Tellingly, they sell their involvement with commerce and industry not on the grounds that companies will be helping to prevent or cure cancer, but that the companies themselves will profit from being aligned with the charity – as this quote from a Cancer Research Campaign document sent to business demonstrates:

'Supporting the CRC makes good business sense: Companies expect tangible and quantifiable returns from their work with charities. We can demonstrate the success of our commercial packages – successes that can make a real difference to sales, corporate image and teambuilding in your business'⁷.

The CRC's enticement to partnership is brazen. Nor is the charity shy about offering its brand image to commercial companies, telling companies: '86 per cent of consumers are more likely to buy a product that is associated with a cause. The most appealing 'causes' to consumers are health and medical research'⁸.

The ICRF is even more bullish in selling its partnership deals. Its website extols entrepreneurs to: 'Make a difference to your business through increase in sales. We have proved that working with ICRF can improve sales results'. Practising what it preaches, the ICRF currently works in 'partnership' with CGU Insurance, NM Rothschild, Siemens, Marks and Spencer, Tesco and Nike. The charity boasts to its partners that it enjoys a 97 per cent 'approval rating' amongst the UK's adult population; it is the image-booster par excellence for the average multinational.

Another point of conflict involves the Boards and Committees of the main cancer charities. A number of these Committee and Board members come from industries which themselves have a long and poor record on cancer. The Chairman of the CRC, for example, is R D C Hubbard, who for 10 years, from 1965-74, was on the Board of Cape Industries, then a major manufacturer of the carcinogen asbestos.

Recently, the charities themselves have been branching out into business, and investing public money in the companies which will produce the drugs and diagnostic aids which they have researched. Early in 1999, for example, ICRF announced that it was to buy a £2.5m stake in Antisoma, a biotech company floated on the Pan-European Stock Exchange in 1998 and the London Stock Exchange in 1999. Antisoma's only product is a treatment for ovarian cancer developed by the ICRF. In such ways, the charity/industry nexus keeps itself moving in smooth circles.

SLOGANEERING

Though much of their funding now comes from business, the cancer charities are still adept at tugging at the public heartstrings – with a view to opening the public purse. Scarcely a month goes by without one or another of them launching a 'major appeal' to raise public money.

Such appeals have become more and more sophisticated over the decades. The charities now spend substantial amounts simply developing new slogans for these campaigns, such as the ICRF's recent 'Turning science into hope', or the misleading 'Finding cures, saving lives'. The charities have found, however, that the most effective slogans are those which insist that 'you' can make a difference. 'Working together, we can achieve so much more' claims Breakthrough Breast Cancer. 'Cooperation is the key to success' insists the Leukaemia Research Fund, which also promises that it is 'Spending your money wisely'. Yet it is virtually impossible for the public to find out how 'wisely' the LRF – or any of the other established cancer charities – are spending their money, for none of them offers a detailed prospectus, a general meeting or

voting rights to subscribers, beneficiaries, workers or interested parties.

DESTROYING THE OPPOSITION

The cancer establishment's refusal to research environmental and chemical causes of cancer could, perhaps, be seen as a crude sin of omission. But its determined and continual assault on all and any 'alternative' therapies and practitioners reveals the charities in their true colours – as footsoldiers for the chemical industry and the conventional medical establishment.

Such 'quackbusting' is not new. The cancer establishment, especially those leading figures involved with the ICR and the Royal Marsden Hospital, the ICRF and the CRC have played a leading part in attacking alternative treatments for almost a century. By 1924, the ICRF was defining one of its primary roles as policing the alternatives:

'The knowledge thus obtained [by the ICRF] has helped to dissipate the atmosphere of hopelessness which formerly existed and has profoundly influenced the diagnosis and the treatment of cancer. It has also served to protect the public against spurious claims which have been made concerning the cause or the cures of the disease.'⁹

The high point of scientific medicine's assault upon alternative approaches to cancer was the 1939 Cancer Act, which coincidentally came into being in the same year that the ICRF was granted its Royal Charter and Charitable Status. The Act forbade, on pain of draconian punishment, anyone other than a qualified doctor, involved in work with cancer, from speaking about the causes or the treatment of cancer. From that point on, the cancer establishment and its partners in industry launched an all-out war on alternative approaches to cancer, which is still being fought today.

THE BIG GUNS

A good example of this war, one of many similar tales, is the story of what happened to the Bristol Cancer Help Centre in 1991. That year, at a press conference, the ICRF and the CRC announced the results of research they claimed to have carried out into the 'therapeutic outcome' of the regime at Bristol Cancer Help Centre, an organisation dedicated to treating cancers with alternative means. The research concluded that women who attended Bristol after having breast cancer diagnosed were three times more likely to die as a result of their illness than women who had conventional treatment.

But the 'research' was not what it seemed. Although the researchers were supposed to carry out two studies, one on survival and the other on quality of life, they failed even to begin the quality of life study and announced the 'results' of the survival study only 18 months into a 5-year schedule. It was later found that the results of the preliminary study were bogus. The researchers had, for example, taken their sample from attendees at Bristol, even if these subjects had not been involved in the Bristol therapy. They had also failed to acknowledge that many of the Bristol attendees studied had previously had – failed – conventional surgery.

It was later revealed that one of the research team, an eminent oncologist, had also been a committee member of Healthwatch, an organisation set up with the main aim of debunking alternative treatments. The head of the study and the report's principal author, Dr Clare Chilvers, has since declared an interest in Zeneca, the company which produces tamoxifen, the anti-breast cancer drug. ♣



The Cancer Research Campaign tells private companies: '86 per cent of consumers are more likely to buy a product that is associated with a cause. The most appealing 'causes' to consumers are health and medical research'.

Although the Bristol study was roundly condemned by statisticians, other researchers and Bristol Clinic attendees, and despite the fact that the publication of the research damaged many people's lives, it was three years before the CRC and the ICRF offered an apology. In January 1994, the Charities Commission censured both the CRC and the ICRF for the study, and consequently Professor McVie and Sir Walter Bodmer, the directors of the two charities at the time.

On this rare occasion, the wrongs done by the cancer establishment to their smaller rivals were made public. Sadly, though, this is the exception. Faced with the power of the big cancer charities, many alternative practitioners simply collapse.

WHAT CAN BE DONE?

The big cancer research charities have become the self-appointed watchdogs over emerging forms of treatment and the censors of campaigns which place the emphasis in cancer research upon the environment and chemicals. Instead of being academically independent and intellectually curious, cancer research scientists are now hand in hand with the very industrial system which has turned modern life into a maze of risk. The big cancer charities' effective monopoly is unaccountable to the people who fund them with voluntary contributions or the representatives of those who leave them bequests. Although they dictate NHS policy on cancer, they are unaccountable to parliament or the public.

Clearly, something has to change, and there are several areas that must be tackled.

CLEANING UP FUNDING

Since the 1980s, government in Britain has scaled back on public funding for scientific research; the consequent trend in research has been for those agencies which distribute large research budgets, to enter into partnership with industry in order to secure shrinking funding. As a consequence, there has been a steady movement of research away from the accountable public sector into the unaccountable private sector.

The power and independence of the cancer charities owe a lot to the continuing unwillingness of government to become involved financially and scientifically in cancer research. Only by removing the dependency of cancer researchers on private money can research become honest again. There are several potential ways of doing this. Research could become the responsibility of the State, and be allocated a budget, dispersed through an autonomous agency similar to the Medical Research Council. Or genuinely independent organisations, placed under much tighter regulation than at present, could be allowed to flourish. There are other options too; but the crucial thing is that this topic is opened for public debate.

ASSURING ACCOUNTABILITY

Cancer research has to be dragged from the grip of vested interests and returned to the more creative appraisal of genuinely independent academics, scientists and intellectuals. There are relatively simple ways of doing this. For example, anyone who has anything to do with cancer research should be vetted for links with carcinogen-producing industries. Office-holders and scientists working in cancer research should have to make a public declaration of all their interests in pharmaceutical or biotech companies. These declarations, together with staff salary figures, should be made publicly available. All cancer research scientists should also have to spend a major part of their time on non-chemical, non-genetic treatments or environmental causes of cancer.

PURSuing PREVENTION

Crucially, though, we need to ensure that genuine research into the real causes of cancer – and thus into genuine prevention – can take place. A wide-ranging programme of research into industrial car-

cinogens should become a priority of cancer research, while the literature on previously tested industrial carcinogens should be reviewed and regulated. All cancer research should be locked into the regulatory process, so that as soon as carcinogens are recorded or discovered, the appropriate regulatory agency acts upon this information.

Statistical information about all cancers, including epidemiological statistics and those on causation – however inconclusive – should be compiled and published in a variety of different forms by an independent body to which the public has access. There should be a frequent public scientific, academic and financial audit of all cancer research, by an independent regulatory review body. The report of this audit should be debated in the House of Commons annually, at which time a yearly cancer research strategy should also be debated.

National Health Service treatment for cancer should also be deregulated and 'freed-up'. Experimental 'alternative' therapeutic work on cancer should be detached from the odium of criminalisation, while remaining within established regulatory boundaries and allowed into hospitals. Trusts throughout the country should be encouraged to explore community-based therapeutic initiatives.

The research, prevention and treatment of cancer is too important to be left in the hands of a small number of unaccountable scientists, funded by industry money and the voluntary sector. Cancer sufferers in Britain have paid too high a price for the indulgence of science and its utopian search for a universal elixir. They have also been kept in the dark for too long about the real price of technological and industrial progress. It is time for the cancer establishment to give up its secrets. ♦

*Martin J Walker is the author of six books, including **Dirty Medicine**. Anyone interested in investing in the publication of his next book – **The Gatekeepers**, a history of alternative cancer care in Britain, should contact him at Slingshot Publications, BM Box 8314, London WC1N 3XX.*

HOW CANCER RESEARCH WAS SOLD DOWN THE RIVER

The official message about cancer, which puts considerable weight on smoking, while ignoring chemicals and environmental carcinogens and at the same time attacking alternative theories of causation and treatment, is now well-established. The 19th and early 20th century emphasis on cause and environmental prevention has shifted to the body of the individual and ultimately the individual cell.

But while today there is public recognition of the role that the tobacco industry played in resisting critical research, there has been no such recognition of the industrial and chemical vested interests which have derailed research into environmental causes. Over the last 50 years, the release of new chemicals into our environment has escalated. The great majority of these chemicals, even the ones in food, are neither tested nor regulated for carcinogenicity.

Up until World War II, investigators searched for environmental carcinogens in the atmosphere, in food, in alcohol, in occupational materials. However, the growing dominance of society by business and industry has increasingly placed the responsibility for cancer and other environmental illnesses at the door of the sufferer. If the causes of cancers are not genetic, then they are said to be the fault of the individual: lung cancer is the responsibility of the smoker, skin cancer is the responsibility of the sun-lover and other cancers are caused by unregulated diets or promiscuous sexual behaviour. Such a theoretical overview lights only a fraction of the path in our journey towards establishing a programme for the prevention of cancer.

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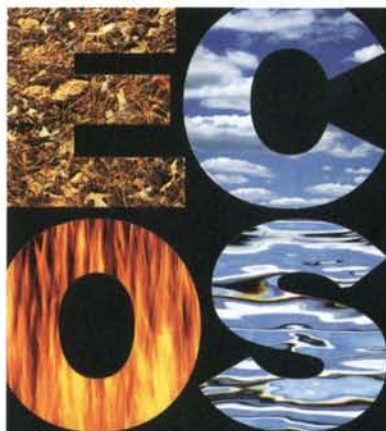


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GIANT SLAYING

Are you, your community or environment being exploited? Joseph Mendelson explains how to use the law to take on the Goliaths.

How would you react if you woke up one morning to discover that something in your life or the world in which you live had changed, and not for the better? How would you feel if you discovered that:

- a cluster of cancer victims exists in your community, and local residents suspect a nearby corporation of illegally polluting the local drinking water supply;
- local officials have permitted a new housing development to be constructed on tidal wetlands threatening the habitat of numerous species of plants and animals;
- a multinational corporation will be planting genetically engineered crops near your farm, threatening your crop with biological pollution;
- a government agency has allowed commercial access to mine for minerals which would destroy a nationally protected wilderness area?

Every day, all around the world, ordinary people wake up to experiences exactly like this. Unprepared, they discover that, because of decisions taken elsewhere by politicians or corporate executives, their life, and that of their community, is about to change for the worse. Often they feel helpless. Faced with such powerful outside forces, it is easy to believe that the ordinary citizen is powerless to fight back. But that belief is wrong.

Though it may not seem so, the legal system can be your ally in such situations. At first sight, the law may seem obscure, complex and horribly off-putting for the ordinary man or woman. Legal action seems expensive, difficult, drawn-out and unlikely to succeed, especially against the rich and powerful; and it can be so.

Nevertheless, in many countries, national and local laws exist which can be used to fight the citizen's corner in just such

cases as those described above. Many such laws actually allow citizens to intervene when activities by a government entity or private industry threaten the environment or human health. By intervening in government decision making, suing to compel government agencies to enforce existing environmental laws or taking polluters to court, many individuals and citizen groups have made and continue to make a difference all over the globe.

Use of the courts and the law in general can be key components in successful efforts to protect the environment and local communities, and promote social justice. And the more that citizens become aware of how the law works, and how it can work for them, the more successful they are likely to be in standing up for their own rights.

Of course, using the law rarely works on its own, and legal action is never a panacea. But in conjunction with grass roots action, political pressure, media work and other such strategies, it can be a vital tool in the activists' armoury. This article lays out just a few of the ways in which the law can work for you.

INFORMATION IS CRITICAL

In any legal action, the first thing you need is information. And whether it be data on the toxicity of a chemical substance, past records documenting the activity of a major polluter, or environmental assessments of projects being planned by government agencies, the chances are you can get this data from the appropriate government agencies. Often, people are quite unaware of what information they are legally allowed to obtain from the authorities – which is often just the way the authorities like it. So a key first step that anyone interested in pursuing a legal action should take is to find out what right to information they have under the law.

Citizens in the United States have a traditional distrust of secretiveness by government agencies. Prior to 1966, however, the idea that people have a 'right to know' about government decisions supposedly taken on their behalf was merely an expression of belief, not law. This changed when Congress enacted the Freedom of Information Act (FOIA) that year. This Act gives the citizen a legally enforceable right to access government documents and data, except some documents in privileged categories. Similar laws exist in many other countries. The European Union's Code of Conduct gives the public the right to access documents of the EU's Commission and Councils. In 1982, Australia passed its Freedom of Information Act and Canada passed its National Access to Information Act. Three years later, Colombia enacted a comprehensive Freedom of Information Law. And just last year, Japan's parliament passed an Information Disclosure Law that will take effect within two years. Numerous other countries are considering new legislation to strengthen or begin legally enforceable disclosure requirements. These proposals include the UK's (much-criticised) draft Freedom of Information Bill and South Africa's proposed Open Democracy Law.

The use of these laws to access information is often critical to assessing the validity of a legal action and the depth of a government official's and/or corporate entity's knowledge of ongoing or proposed illegal actions. Filing a request for documents under these laws is usually relatively easy and cheap and can be done without legal representation. More often than not, the documents received will provide new insight into the issue in contention, and can often yield a 'smoking gun', which can create the public reaction necessary to change things.

What's more, even failing to obtain information under such 'right to know' laws can help your campaign. Under US laws, for example, if documents are refused to someone requesting them, that person can go to the Federal District Court and sue the agency to produce the withheld records. If the person wins, the agency can be ordered

to produce the withheld documentation and to pay all legal costs. And the very filing of such a case can spotlight the campaign you are promoting. When a government agency denies a citizen access to documents, the media often begins to ask questions: What are the documents you are seeking? Why are you interested in the documents? What is the government hiding from the public view? If there truly is no problem, why won't the government just give you the information to prove it? Such obvious but probing questions, if handled well, can put the government on the defensive and raise public awareness and sympathy for your case.

BRINGING THEM TO BOOK

Often it seems as if the law exists only to protect the powerful and the established; but this is not the case. In many situations, it is possible to use legal means to actually force government agencies and private companies to comply with various regulations. In the US, this can be accomplished through a mechanism referred to as the 'citizen suit' – a provision within laws such as the Clean Water Act and the Clean Air Act which allows citizens to step in when a government agency is not doing an adequate job enforcing existing regulations. Similar provisions are present in the laws of other countries too.

Another key component in any legal action can be the 'discovery process', which is similar in many ways to freedom of information requirements. In many countries, the legal system requires a government agency or corporation that is sued to provide the other side with internal documentation relevant to the case. The material can often provide striking support for a legal position, and it can also serve to sway political opinion, perhaps even to the point of prompting the sued entity to settle a case.

For instance, in the US, documents 'discovered' during lawsuits against cigarette manufacturers revealed that nicotine levels were being manipulated to induce smokers' addiction. This revelation gave public-health advocates the critical evidence needed to pursue stronger regulation of the tobacco industry. Another good example occurred when my organisation, the Center for Food Safety, sued the United States Food and Drug Administration (FDA) for its failure to institute mandatory pre-market safety testing, full environmental review and mandatory labelling for genetically engineered foods. The discovery in that case yielded 44,000 pages of internal FDA documents related to GE foods, many of which revealed that FDA scientists had serious health and environmental concerns about GE foods that went ignored by the government. While the case is still awaiting a decision, the documents have provided an important media 'handle' and helped activists worldwide in their efforts to halt the introduction of new GE foods.

It's worth sounding a warning note at this point, though. For however tempting such a lawsuit may seem, before taking the litigation plunge, individuals and organisations should assess all available legal options. A simple question to ask is whether incurring the potential cost and time of proceeding with a full-blown legal action is necessary. Often there are cheap and

'The more that citizens become aware of how the law works, and how it can work for them, the more successful they are likely to be in standing up for their own rights.'



less burdensome initial legal actions for advocates to take. In cases against a US government agency, for example, it can often be a prudent first step to petition the agency to redress its illegal action. If filed in the proper manner, a legal petition brings forth a complaint of law to a government body and seeks remedial action to which the agency is legally required to respond. This tool provides you with the opportunity to appeal to a government entity to stop an illegal action prior to initiation of a lawsuit and to publicise the matter at hand without going directly to court. If the government entity denies the request, as it usually does, then the petitioners can proceed to court at least knowing that they tried all other options first.

SUING THE POLLUTERS

Probably the most direct way of tackling destructive corporations, in particular, is to take the plunge and sue them for damage they have caused to people or property. This is never easy, and rarely cheap, but

'Probably the most direct way of tackling destructive corporations is to take the plunge and sue them for damage they have caused.'

it can be remarkably successful. Such lawsuits may be based on specific statutory provisions or on certain common-law concepts (in many countries the legal system is based primarily on common law). Under these laws, one may sue for nuisance, trespass, negligence, strict liability or product liability. Courts around the world have compensated claimants in cases like these in a wide variety of circumstances. These have included awarding damages when people became ill from consuming water contaminated by illegally dumped waste, and large recoveries for injuries caused by asbestos in buildings, to name just two.

More often than not, though, victims of corporate misdeeds and environmental injury live in countries where the political system prevents obtaining justice through the legal system. But this need not preclude justice being served. Using the US courts to sue multinational corporations for actions in other countries that violate environmental laws and international human rights agreements is becoming more frequent. In recent years, a group of Burmese citi-

McLIBEL: THE TRIAL THAT CHANGED IT ALL

In 1990, two unemployed anti-corporate activists in London changed the face of legal campaigning against corporations by refusing to roll over in the face of intimidation from one of the world's best-known companies: McDonald's. In doing so, they sparked off the longest-running trial in English legal history –

damage and ill-treatment of animals. To the corporation's surprise, two of the accused, Dave Morris and Helen Steel, refused to back down. Instead, they began a thorough defence of their case.

Their trial began in 1994. When it ended, three years later, it had become the longest-running trial in English history. It had cost

Morris and Steel – who, denied legal aid had mounted their own defence against McDonald's litany of lawyers – nothing. It cost the corporation millions of pounds. The judge's verdict was mixed, but it upheld or partially upheld a number of the charges against the corporation, and although costs were awarded against Steel and Morris, they refused, and were unable, to pay them.

Overall, the trial became an expensive and embarrassing public relations disaster for the corporation. The defence served to publicly expose a number of unsavoury corporate practices, and to stimulate growing dissent against McDonald's. It helped spark dramatic protests against the fast-food giant around the world. The combination of a dramatic legal defence, grass-roots pressure and a well-orchestrated public media campaign, includ-



Happy deal?: Dave Morris and Helen Steel, the McLibel Two.

which quickly became known as the 'McLibel' case.

In 1990, McDonald's served libel writs on five London Greenpeace volunteers for handing out leaflets attacking almost all aspects of the corporation's business – accusing them of exploiting children through advertising, promoting an unhealthy diet, exploiting their staff and being responsible for environmental

the posting of many 'discovered' internal McDonald's documents up on the Internet, sent McDonald's into effective retreat when the company finally dropped its attempt to recover financial damages. Meanwhile, the anti-McDonald's leaflet, originally only seen by a handful of people on the streets of London, has now been seen in its millions around the world.

zens, denied justice in their own country, sued the Unocal Oil Company in California for its involvement in a disastrous natural gas project in Burma. A group of Indonesian tribal leaders filed a class action in the US state of Louisiana against mining giant Freeport-McMoRan for its dumping of mining tailings into local rivers in Irian Jaya. And a group of US and foreign farmers sued Monsanto and other biotechnology companies in the US court for violations of US antitrust laws, nuisance laws and violations of customary international law. While all of these actions may not be successful, they do highlight how legal relief can be obtained in Western courts for injuries occurring in countries characterised by inaccessible courts or ruled by repressive regimes.

DEFENDING YOURSELF

Suing a corporation or government is one thing; being sued by them is quite another. But being such a target can actually provide important strategic and legal opportunities. Provoking a lawsuit in order to air grievances should, of course, be approached cautiously, particularly because of the potential personal and financial liability involved. However, several recent cases do demonstrate how a good defence to a lawsuit (often known as a 'strategic litigation against public participation', or SLAPP suit) can present excellent campaigning opportunities.

One such case is currently being considered by the US Supreme Court. Marvin Redenius, a 34-year-old seed salesman from Iowa, is considered a 'seed saviour' by some after deft handling of a case brought against him by the global agricultural giant Pioneer Hi-Bred International. Redenius's company, Farm Advantage, was sued by Pioneer for patent infringement when it sold 600 bags of Pioneer seed corn without Pioneer's permission. While Pioneer thought it was simply engaging in a corporate action to intimidate a small, family-run agricultural business, it ended up opening a legal floodgate that could alter the ability of multinational corporations to continue exercising intellectual property rights over the world's seeds. In defending Redenius, lawyer Bruce Johnson raised the brilliant defence that, under current US law, sexually reproducing plants cannot be patented, and therefore Redenius could not possibly have infringed Pioneer's patents. This argument proved a breakthrough.

For years, US farm and environmental activists have been seeking



Taking arms: Indonesians fight back against mining giant Freeport-McMoRan.

'Victims of corporate and environmental injury often live in countries where the political system prevents obtaining justice. But this need not preclude justice being served.'

corporate right to pollute or exploit. Nonetheless, the law still represents an under-utilised avenue for activists campaigning for environmental and social change. Through co-ordinated legal and grass-roots action, individuals and NGOs can remedy injury, alter policies and set precedents that can prevent destructive and harmful actions well into the future.

Though by no means comprehensive, the remedies discussed above may at least help to legally jump-start your efforts to change the world. Finding knowledgeable and experienced environmental, human rights or personal injury lawyers willing to undertake your particular case is a formidable but achievable task. Many different resources can help you find a suitable lawyer. Check with local or national lawyer associations or organisations, contact non-governmental organisations with a legal focus, and find out whether law schools and universities in your area have courses designed to assist people in your situation.

Finally, and most importantly, do not let the law intimidate you. If used well, it can often be your best asset. ♦

Joseph Mendelson is legal director of the Center for Food Safety and the International Center for Technology Assessment, both based in Washington DC.

a way to challenge the Patent and Trademark Office's illegal extension of patent protection to seeds (dating back to a decision in 1985), but the law had barred them access to the courts. Unknowingly, Pioneer's intimidation tactics reopened up the seed patenting legal debate and the issue is now being considered for a ruling by the Supreme Court. If the Redenius defence is successful, the change in patent law will significantly limit transnational corporations' ability to expand corporate control over the seed market and to seek new patent protection for genetically engineered seeds. In this case, a deft legal defence may well have achieved what was previously unobtainable.

FIGHTING BACK

The law is far from perfect, and using it to your advantage is by no means always easy. Undoubtedly, laws are often manipulated and even created to allow vested interests to take actions that can harm human health and poison the environment. Many laws have actually codified a

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DISCOMFORT AND JOY

Bill Joy, founder of Sun Microsystems, is one of the world's leading computer gurus. But now he is warning that, if the pace of technological change is not slowed, we could be inventing the species that will replace us.

Is he a prophet or a madman?

Zac Goldsmith talks to him to find out.

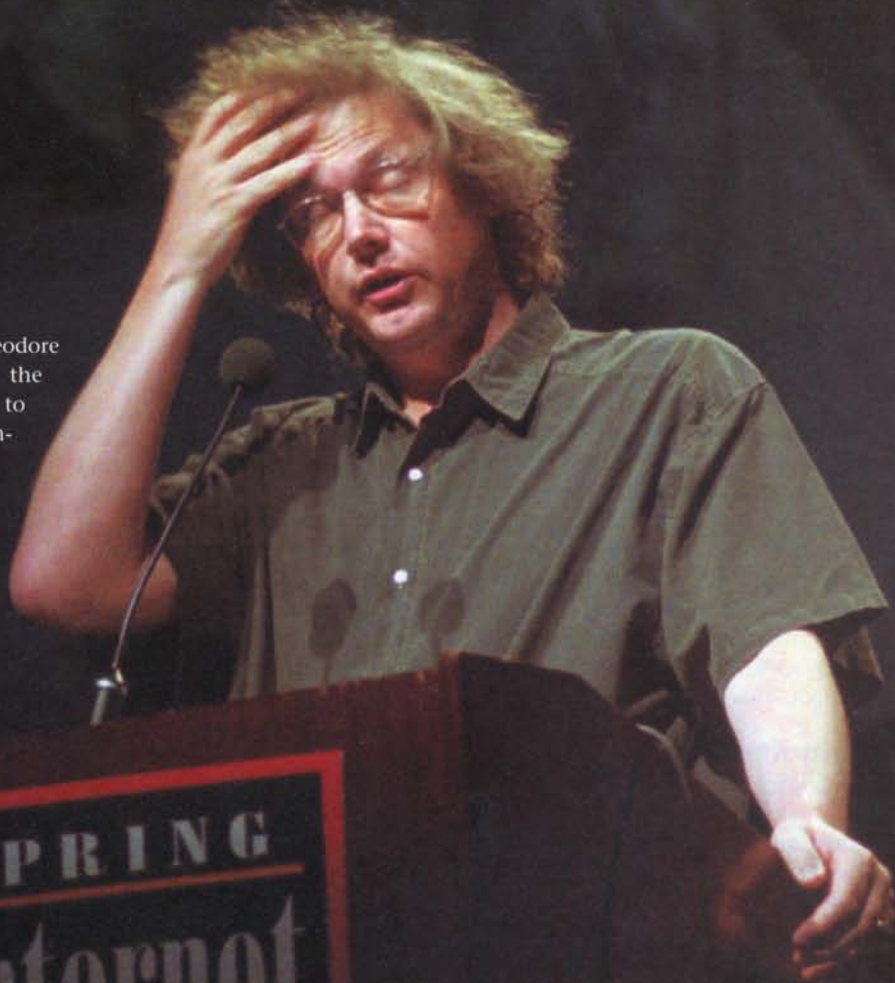
What do you get if you cross Bill Gates with Theodore Kaczynski, the man better known as the Unabomber? A maniac technophobe willing to kill to save us all? A reclusive computer nerd with nothing interesting to say? System error type 201?

Surprisingly, there is someone who represents the hypothetical love child of these apparently polar extremes – but let's explore the 'parents' first.

Consider for example a few lines from Gates's book, *The Road Ahead*: 'I used to date a woman who lived in a different city. We spent a lot of time together on email. And we figured out a way we could sort of go to the movies together. We would find a film that was playing about the same time in both our cities. We would drive to our respective theatres, chatting on our cellular phones. We would watch the movie and on the way home we would use our cellular phones again to discuss the show.

In the future this sort of virtual dating will be better because the movie watching will be combined with videoconference.' (I can't help but imagine how

ALL PICS: AP PHOTOS



✦ Gates might have ended his virtual evening.)

This simplistic techno-enthusiasm could not be further removed from the apocalyptic prophecies of Kaczynski, the man whose terror of technology led him to send home-made bombs to computer scientists and university professors, some of whom he killed, others of whom he maimed for life. 'If trends continue,' he wrote in the public manifesto which ultimately led to his capture, 'and scientists succeed in developing intelligent machines that can do all things better than human beings can do them, the human race might easily permit itself to drift into a position of such dependence on the machines that it would have no practical choice but to accept all of the machines' decisions. Eventually a stage may be reached at which the decisions necessary to keep the system running will be so complex that human beings will be incapable of making them intelligently. At that stage, the machines will be in effective control. People won't be able to just turn the machines off, because they will be so dependent on them that turning them off would amount to suicide. The fate of the human race would be at the mercy of the machines. They will have been reduced to the status of domestic animals.'

Maybe Gates's vision of the future seems more likely to you than Kaczynski's. But then, you may not have spent the majority of your adult life studying technological matters. Bill Joy has, and he is beginning to wonder.

Bill Joy's credentials as one of the world's leading computer gurus are impeccable. Chief scientist and co-founder of Sun Microsystems, one of America's leading computer firms, he was appointed three years ago as co-chairman of Clinton's Presidential Information Technology Advisory Committee, set up to provide 'guidance and advice on all areas of high-performance computing; to accelerate development and adoption of information technologies that will be vital for American prosperity in the twenty-first century'. In other words,

Bill Joy sits at the top of the American technolog-

ical pecking order, and as such is partly responsible for the major social experiment that is technotopia.

But then, last year, Joy changed his tune. He published a lengthy article in the technophile's bible, *Wired* magazine, in which he warned, in almost apocalyptic tones, of the dangers of going too far with computer technology. 'Its potential to destroy humanity,' he wrote – 'even to supplant us as the planet's dominant species – is far greater than that of nuclear weapons; yet we are blindly moving towards a world in which such a possibility becomes a reality.'

Kaczynski said much the same; but he was an eccentric, a loner and a killer, and no one wanted to listen. Joy, though, one of America's technological royal family, is another matter. Bill Joy is our Gates-Kaczynski hybrid, and his vision of the future is worth listening to, because he knows, better than almost anyone else, exactly what he is talking about.

TECHNOTOPIA

Talking to him now, he says that his principal fear is nanotechnology. 'The ability,' he explained to me, when I confessed ignorance, 'to manipulate structures at the atomic scale. The ultimate dream is to be able to build any structure you can design by assembling it atom by atom. This is not yet possible, but the field is advancing rapidly.'

'I think it is no exaggeration to say,' he wrote in *Wired*, 'that we are on the cusp of extreme evil, an evil whose possibility spreads well beyond that which weapons of mass destruction bequeathed to the

nation states, on to a surprising and terrible empowerment of extreme individuals. By 2030, we are likely to be able to build machines, in quantity, a million times as powerful as the personal computers of today – sufficient to implement the dreams of Kurzweil.' Kurzweil is the author of *The Age of Spiritual Machines*, which details a utopian future in which humans achieve near-immortality by becoming one with robotic technology.

How soon could such an intelligent robot be built? 'The coming advances in computer power,' he wrote in the *Wired* article, 'seem to make it possible by 2030. And once an intelligent robot exists, it is only a small step to a robot species – to an

intelligent robot than can make evolved copies of itself. We are opening Pandora's most terrifying box, yet people have barely begun to take notice. We are designing technologies that might literally consume ecosystems.'

'I may be working to create tools which will enable the construction of the technology that may replace our species. How do I feel about this? Very uncomfortable.'

FANTASY OR REALITY?

My own reaction to his predictions, reading as they do almost like a far-out science fiction fantasy, was at first disbelief. I asked him how serious are these predictions. Has he not allowed himself to become carried away? 'I tried to write the article in a way that wasn't extremist,' he says. 'I now believe that certain of the situations are, in fact, more dangerous than I portrayed. For instance, I probably understated the danger from the biological sciences. While the dangers of industrial chemicals and the like are generally understood, I don't think this is the case for the more extreme dangers I am describing.'

He is in no doubt as to the likelihood of what he is predicting. 'There is no question these technologies are powerful enough to do extreme harm,' he says. 'There's also no question we're on a course to give them to everybody, and this will ultimately lead to disaster.' As to his role as prophet of doom, he simply says, 'Look at Rachel Carson. She painted a pretty bleak picture. While we heeded her warnings about DDT, we are still a long way from dealing with the consequences of industrial chemicals – consider the continuing issues with chlorine, as outlined in Joe Thornton's *Pandora's Poison*'.

WHAT FUTURE ARE WE FACING?

In his *Wired* article, Joy describes the elation he experienced in his youth on reading a book by Eric Drexler, *Engines of Creation*, on the potential wonders of nanotechnology and manipulation of matter at the atomic level. He goes on to describe how, 10 years later, on rereading Drexler's book, he was 'dismayed to realise how little I had remembered of its lengthy section called "Dangers and hopes" and dismayed too at the naivete of Drexler's safeguard proposals. One such danger was that "plants" with "leaves" no more efficient than today's solar cells could out-compete real plants, crowding the biosphere with an inedible foliage. Tough omnivorous "bacteria" could out-compete real bacteria: they could spread like blowing pollen, replicate swiftly, and reduce the biosphere to dust in a matter of days. Dangerous replicators could easily be too tough, small, and rapidly spreading to stop – at least if we make no preparation. We have trouble enough controlling viruses and fruit flies'.

Joy maintains that, ever since he first began developing computer software, he has been concerned, albeit less so than today, about the consequences of his actions. But on rereading Drexler's and other similar books, and closely following developments in nanotechnology, he began to realise that 'I may be working to create tools which will enable the construction of the technology that may replace our species. How do I feel about this? Very uncomfortable'.



Bill Joy is certain that technological 'progress' will land us with forces capable of destroying life on earth – forces that once unleashed we may never again be able to control. And what really bothers him is that nobody is talking about it. 'We are making these huge changes, introducing hugely disruptive technologies which are arguably more powerful than anyone can imagine,' he insists, 'and there is essentially no public discussion.' Of utmost concern in his mind is the need to avoid handing control of those technologies to 'crazies' – presumably the Kaczynskis of the world. 'Within 20 years, and quite possi-

bly much sooner, we run the risk of irretrievably giving too much power to crazy people. It's time to talk about these things now.'

I point out to him, though, that it is legitimate corporations, of the sort that he has headed, that are responsible for developing these technologies, and that they are doing so for purely commercial reasons. I point out that his own predictions suggest we could even be heading towards extinction, perhaps simply as a result of a laboratory error. Is it not possible, I ask him, that these technologies are already in the hands of 'crazies'?

He sidesteps the question. Instead, he says that, unlike the period of the cold war, where foreign enemies took part in an arms race, today, the enemy is within us all – 'our habits, our desires, our economic system, and our competitive need to know'. What we are in danger of, he says matter-of-factly, 'is a self-inflicted wound, a self-inflicted extinction'.

On the subject of science and technology itself, Joy made himself very clear in his *Wired* article. 'Failing to understand the consequences of our inventions while we are in the rapture of discovery and innovation seems to be a common fault of scientists and technologists,' he wrote. We are charging towards a murky future, 'hardly evaluating what it might be like to try to live in a world that is the realistic outcome of what we are creating and imagining'. What's more, he wrote, 'There is no profit in publicising the dangers'.

ME VERSUS THEM

Is there not a danger that he might be vilified by his peers for his outspokenness – excommunicated from the club? After all, his message is not one which the leaders of business and science are likely to want to hear. 'I've heard almost nothing from what I would call the high-tech leadership,' he explains. 'Perhaps I'm playing a tune with notes they can't hear, or perhaps they have filters up, blocking out what they perceive as a stridency they associate with the environmental movement.'

'This can't become "me" versus "them",' he insists. 'They'll put dirt on me, right? – "His software was a commercial failure, he's just bitter," etc.' Alarming words from someone in his position.

Joy stresses, again and again, how different tomorrow's computer technologies will be, in almost every way, from the technologies we have experienced before. 'Used to living with almost routine scientific breakthroughs,' he wrote in *Wired*, 'we have yet to come to terms with the fact that the most compelling 21st century technologies – robotics, genetic engineering and nanotechnology – pose a different threat than the technologies that have come before. Specifically, robots, engineered organisms, and nanobots share a dangerous amplifying factor: they can self-replicate. A bomb is blown up only once – but one bot can become many, and quickly get out of control.'

But interestingly, and maybe surprisingly, his critique of technology does not encapsulate that society which pursues technotopia. I

bring to his attention a number of recent studies on the effects of the Internet on users. The Stanford University Institute for the Quantitative Study of Society, for instance, recently found that the Internet 'was creating a brand-new wave of social isolation in the US, raising the spectre of an atomised world,' where people spend more time 'home, alone, anonymous'. I ask him for his views on Clinton's recent pledge to spend \$150 billion taxpayer dollars on equipping every school classroom with up-to-date computers. 'Computers in schools,' he says simply, 'are overrated.'

It is as though his computer world, indeed his life, has suddenly been thrown into question by his discovery of the problems surrounding technology. 'There is no doubt we are interfering in systems that we don't understand, and we will surely be responsible for large parts of the environment breaking down,' he acknowledges, casually, 'but I'm attempting to focus my energy on a more narrow problem – one which I understand.'

WHAT TO DO?

If the problem is as dire as he says it is, and the timescale as short, what action does he propose we take? I suggest that multinational corporations are out of control, and that government is both unwilling and unable to take responsible action.

'I don't believe we will do the right thing unless we are honest about the problem,' he says, 'and it's not in many people's interests to be honest about the problem. It's not even in government's interest to face the problem because of how the political system works. The problem with politicians, and politics in general, using the example of genetic engineering, is that there is always a very powerful small interest that would be seriously affected economically if a ban were implemented, whereas lots of people stand to lose in a smaller way if biotech products were allowed to go through. Interest groups have much more influence and can easily balance out an enormous numerical disadvantage.'

And the sheer speed of modern society, he says, makes pos-

itive change more difficult. 'I don't think that government regulation can in any case keep up with the current pace of technological change. Why are we in such a hurry? Why do we have to get there in one generation instead of three?'

Yet 'companies can be monitored,' he assures me. 'What makes it difficult is that there is not one single big offender. We could send strong signals through economic mechanisms, taxation, regulations, insurance requirements and other means to direct business towards the right questions with an emphasis towards a common-sense answer. We need some new, gracefully applied, limits.'

First though, 'we desperately need honest discussion within the province of people in the universities who have academic freedom or who aren't entangled with business interests. We need objective reporting by people willing to take the time to write it up in a way that everyone can understand. We need scientists with strong credentials to examine these problems, and we need to turn to the non-profit sector for guidance.'

'One of the problems has been that industry has been able to profit enormously from consuming irreplaceable things, generating environmental problems, and without internalising the costs. At the moment, society, in other words the taxpayer, has to foot the bill when business messes up. In a sense, the fact that there is no requirement

'You can't create a scientific breakthrough and not think about what the consequences of the technological use of it are.'



for business to take these things into account amounts to a massive indirect subsidy. These unpleasant consequences have to be internalised within the corporate economic model.'

A possible mechanism, he suggests, for ensuring corporations avoid taking unnecessary risks for quick profit is insurance.

'Companies should have to take catastrophic insurance when they are dealing with dangerous technologies. If the Canadian company which shipped over the GM seed had gone through that process and taken an insurance policy, they would have set up procedures to make sure that the stuff didn't get mixed in order to get a decent rate from the insurance company.'

INTERNATIONAL COUNCIL OF CAUTION

But Joy is talking about relatively short-term measures, which require full co-operation with the very businesses that are driving through the techno-revolution that he fears. In the long term, as he himself accepts, the process of technological change and the consequent risks

need to be democratised. In any normal terms, and by any normal standards, a corporation should not be permitted to toy with fundamentals like genes, nanotechnology and the like without the full endorsement of those whose lives will be affected should anything misfire. 'If someone is doing biological, chemical, nuclear, genetic, robotic or nanotech weapons of mass destruction [for example], then that is of global interest. One thing is for sure – we urgently need to set up a world regulatory body if only to protect us from ourselves.'

Joy likes the idea of international regulation of new technologies, and it features heavily in his thinking, such as it is, about tackling the problems of potential runaway technology. 'The situation in ancient Greece,' he says, 'was that the community was governed by people drawn by lot. Perhaps we could set up an international council on the same basis, continuously selecting new faces to avoid possible co-option. Obviously if it is business dominated and consequently biased, it won't accomplish the task.'

THE ROAD AHEAD

Perhaps, in the long-term, we could. But today in any case, most of

the solutions presented are borderline lunatic – abandoning planet earth for instance in search of further stars to 'develop'. And even marginally more serious proposals are far from convincing. First they rest on the assumption that there can be technical solutions to what are essentially systemic problems. Second, they assume that technocrats are willing and even able to provide protection, and third, they assume an understanding of the problem itself, which in many ways even Joy himself seems not to have grasped. Had he done so, he would surely accept that the economic path currently being pursued by most governments of the world today, coupled with an insatiable demand by an increasingly dissatisfied people for novelty, may well lead straight to the 'realistic outcome' that unnerves him. As Luis Alvarez, a leading physicist whom Joy cites in his *Wired* article, has said, those responsible for coming up with such techno-fixes, are 'very bright guys with no common sense'.

The only sane alternative, he concedes, is to limit our pursuit of certain kinds of knowledge, even though, as he puts it, such limits 'fly in the face of the human experience'. Common sense, he argues, demands that we re-examine basic, long-held beliefs. 'The American-style economic system encourages an infatuation with the "new". No one seems prepared to slow down and be cautious. You only have to

look at our experiment with antibiotics. We clearly jumped into bed with a new technology with our eyes shut, and we are paying for it now, with multi-drug-resistant diseases. DDT and thalidomide fall into the same category. And where is the evidence that cellphones are safe?

'Let's have scientists understand that they have an ethical responsibility; that the distinction between pure and applied science is largely gone. You can't create a scientific breakthrough and not think about

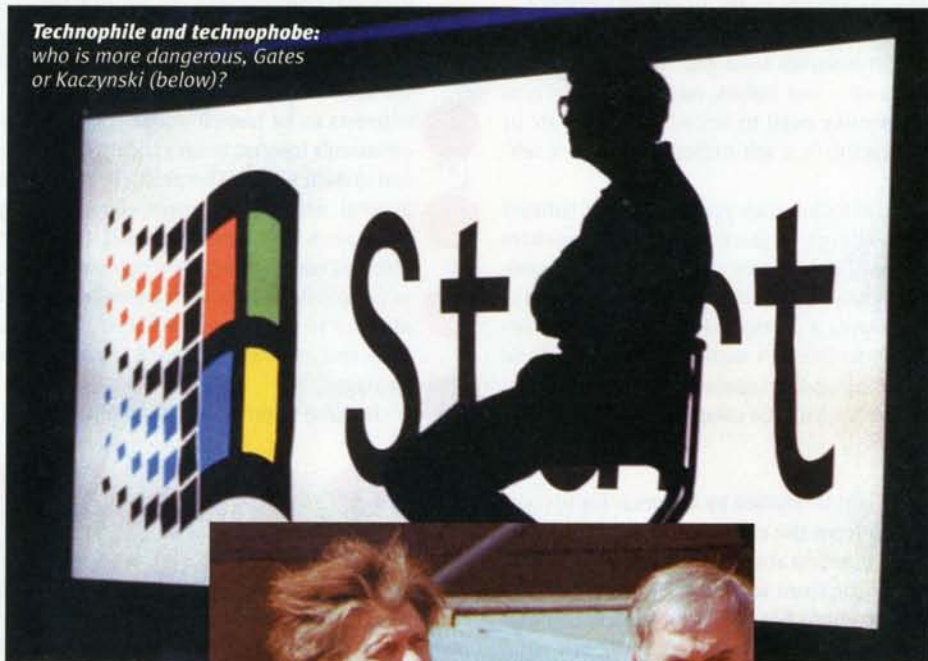
what the consequences of the technological use of it are. The Dalai Lama has pointed out what Western research has clearly shown: having more things doesn't necessarily make people happy. Beyond some point it is just a nuisance. The simplicity movement, fractional ownership – all point towards smarter paths.'

SEEKING CHANGE

In his *Wired* article, Joy expresses irritation at the reaction of some of his colleagues to the problems he sees. 'Many other people who know about the dangers still seem strangely silent,' he

writes. 'When pressed, they trot out the

Technophile and technophobe: who is more dangerous, Gates or Kaczynski (below)?



“this is nothing new” riposte – as if awareness of what could happen is response enough.’

In his own life, he says he feels a ‘deepened sense of personal responsibility – not’ he quickly adds, ‘for the work I have already done, but for the work that I might yet do, at the confluence of the sciences’. Yet none of what he now believes seems to have made him do what many might think would be the obvious first step – stop developing the very technology that he is warning about. Ask him about this and you might get a curious answer: ‘I have always believed,’ he wrote in *Wired*, ‘that making software more reliable, given its many uses, will make the world a safer, better place; if I were to come to believe the opposite, then I would be morally obligated to stop this work. I can now imagine such a day may come.’

But he says he is actively trying to raise the dangers at the top level. ‘I want to go next January to the World Economic Forum and hopefully we’ll have some discussion on this there. I plan to talk about these issues at the OECD meeting in Paris. Obviously economics will play a major part in the discussions. I consider that to be a very positive thing to do. I’m trying to work with numerous science organisations, I’ve already met with half a dozen, and I’m writing a book with more emphasis on what we can do about these problems. My article triggered an enormous response.’

He is, I remind him, in the very unusual position of straddling two quite different camps. With one foot in big business and one in the technological world, will he seek to use his position to influence America’s likely leaders of tomorrow? ‘I’ve written to all the major candidates. So far, I’ve only received a response from George Bush.’ Positive? Evading the question, he answers, ‘I’m personally a supporter of Gore, but if Bush is elected I’m happy to work with him. After all, even if Gore is elected we could easily find that he isn’t very active on this issue’.

I return to the question of his involvement. Government has shown a total lack of interest in regulating business activity. We only need look at the farcical manner with which biotechnology is currently regulated to see this. Business has generally shown zero self-restraint when dealing with potentially explosive technologies. Global institutions, too, have historically been prone to domination by big business. What hope is there that such a new institution, as recommended by Joy, could avoid such compromises? What hope is there that such an institution would even be set up? Will he lobby for such a body? ‘At this point, I’m just lobbying for a discussion. Perhaps G7 or GATT might be able to accommodate these kinds of things,’ he says, not realising the contradictions in his own analysis.

Whatever Bill Joy decides to do, there is no doubt he will play a vital role in the coming debate. Though perhaps he has not fully thought out the true implications or the logical conclusions to his ‘tune,’ his intentions are clear, and unlike others in his field, he is willing to rethink some very basic assumptions.

Our conversation has ranged from the hysterical to the solemn, and the tape recorder attached to my phone crackles to an abrupt end. I comment, a stiff joke, that my own technological shortcomings mean an end to our discussion. No response, just a shard of consolation: ‘In the end, we do tend to overestimate our design capabilities’.

Zac Goldsmith is editor of *The Ecologist*.

‘WHY THE FUTURE DOESN’T NEED US’

Bill Joy’s article in the April 2000 issue of *Wired* magazine laid out in detail his fears for the future of technology. The following quotes from that article highlight his key arguments and concerns.

CREATING INTELLIGENT MACHINES:

By 2030, we are likely to be able to build machines, in quantity, a million times as powerful as the personal computers of today. As this enormous computing power is combined with the manipulative advances of the physical sciences and the new, deep understandings in genetics, enormous transformative power is being unleashed. These combinations open up the opportunity to completely redesign the world, for better or worse: the replicating and evolving processes that have been confined to the natural world are about to become realms of human endeavour.

NANOTECHNOLOGY:

Manipulation of matter at the atomic level could create a utopian future of abundance, where just about everything could be made cheaply, and almost any imaginable disease or physical problem could be solved using nanotechnology and artificial intelligences. A subsequent book imagines some of the changes that might take place in a world where we had molecular-level ‘assemblers.’

Assemblers could make possible incredibly low-cost solar power, cures for cancer and the common cold by augmentation of the human immune system, essentially complete cleanup of the environment, incredibly inexpensive pocket supercomputers – in fact, any product would be manufacturable by assemblers at a cost no greater than that of wood – spaceflight more accessible than transoceanic travel today, and restoration of extinct species.

Unfortunately, as with nuclear technology, it is far easier to create destructive uses for nanotechnology than constructive ones. Nanotechnology has clear military and terrorist uses, and you need not be suicidal to release a massively destructive nanotechnological device – such devices can be built to be selectively destructive, affecting, for example, only a certain geographical area or a group of people who are genetically distinct.

MERGING MAN WITH MACHINE:

A second dream of robotics is that we will gradually replace ourselves with our robotic technology, achieving near immortality by downloading our consciousnesses... But if we are downloaded into our technology, what are the chances that we will thereafter be ourselves or even human? It seems to me far more likely that a robotic existence would not be like a human one in any sense that we understand, that the robots would in no sense be our children, that on this path our humanity may well be lost.

THE PURSUIT OF KNOWLEDGE:

Aristotle opened his *Metaphysics* with the simple statement, ‘All men by nature desire to know’. We have, as a bedrock value in our society, long agreed on the value of open access to information, and recognise the problems that arise with attempts to restrict access to and development of knowledge. In recent times, we have come to revere scientific knowledge. But despite the strong historical precedents, if open access to and unlimited development of knowledge henceforth puts us all in clear danger of extinction, then common sense demands that we re-examine even these basic, long-held beliefs.

TOLD YOU SO: New developments give weight to Joy’s worries

On August 31, *Nature* magazine published the most recent developments in robotics: computers can now design and build their own robots with no intervention from humans. The development is being hailed as a crucial step towards the ‘artificial evolution’ of intelligent robots. Hod Lipson and Jordan Pollack of Brandeis University, Massachusetts, USA, connected a robot-designing computer to a machine capable of automatically building robots to the computer’s specification. Given the task of creating a robot capable of moving across the floor, the computer produced designs which

it ‘evolved’ by introducing random mutations – much as in biological evolution – until the required result was achieved. Once the computer had perfected the design, it instructed the machine to build the robot.

In a separate development, from the same issue of *Nature*, three computer scientists from the University of Lausanne, Switzerland, report success in teaching ‘swarms’ of small robots to interact with each other and work ‘in a self-organised manner, similar to workers in an ant colony’ – foraging for ‘food’ which is then taken back to their ‘nest.’

HELL ON EARTH



BRIDGEMAN ART LIBRARY

Humanity has transformed the planet almost unrecognisably; now we talk of re-engineering ourselves to fit. Edward Goldsmith wonders how we can miss the point so dramatically.

To most people it should be obvious that the environment most friendly to the needs of living things is that to which they have been adapted by their evolution and upbringing. Common sense tells us that this must be so. So a tiger is adapted by its evolution and upbringing to living in the jungle, and it is that jungle which provides its optimum environment. It is in the jungle that it can best satisfy its physical and psychological requirements; it is the food it finds there that it has best been adapted to eating, and it is the smells encountered there that it has best been adapted to detecting, interpreting, reacting and enjoying.

WHAT ARE WE?

There is no reason to suppose that Man is in any way exempt from this fundamental principle. We, too, survive and flourish best in the environment in which we evolved. But what is Man's natural environment? To answer this, we must consider that Man is by nature a hunter-gatherer. As S Washburn and C Lancaster¹ write:

'The common factors that dominate human evolution and produced homo sapiens were pre-agricultural. Agricultural ways of life have dominated less than 1 per cent of human history and there is no evidence of major biological changes during that period of time... the origin of all common characteristics must be sought in pre-agricultural times.'

It makes sense, if this is the case, that the optimum environment for Man is likely to be that in which his hunter-gatherer ancestors evolved. And as modern humanity transforms the environment of our entire planet to satisfy the requirements of industrial economic development, so our surroundings satisfy our basic needs ever less satisfactorily. This principle was formulated very eloquently by the Australian biologist Stephen Boyden:²

'If the conditions of life of an animal deviate from those which prevailed in the environment in which the species evolved, the likelihood is that the animal will be less well suited to the new conditions than to those to which it has become genetically adapted through natural selection and consequently some signs of maladjustment may be anticipated.'

If many of us refuse to face this principle, it is probably because its implications are so far-reaching. But that refusal can reach absurd and dangerous levels when it is taken up by 'experts'. The molecular biologist and Nobel Laureate James Watson has recently suggested, in apparent seriousness, that if Man cannot adapt to the world that science and industrial development are bringing into being, then it is Man who must be changed. New, genetically engineered people could adapt to and perhaps even thrive in the polluted and ecologically degraded world that modern Man is substituting for the world to which we have been adapted by our evolution. Such a suggestion can only demonstrate to what extent mainstream science has lost touch with the real world in which we live ever more precariously.

DISEASES OF CIVILISATION

It is increasingly clear, in fact, that modern economic development is giving rise to conditions which lie outside what ecologists call our 'tolerance range'. Examples are legion. We now eat food grown by unnatural processes which make use of a host of chemical substances: hormones, antibiotics, insecticides, herbicides, fungicides – of which residues are to be found in nearly all the food commercially available today. Our food is then processed in vast factories with the result that its molecular structure is often totally different from that of the food we have been adapted to eat during the course of our evolution. It is further contaminated with chemicals such as emulsifiers, preservatives and antioxidants designed to increase its shelf life and improve its commercial viability. We drink water contaminated with nitrates, heavy metals and synthetic organic chemicals, including pesticides, which no com-

mercial sewage works or water purification plants can entirely remove. We breathe air polluted with lead, carbon monoxide and nitrogen oxides from car exhausts, sulphur dioxide from chimney flues, radioactive iodine, caesium and a host of other radionuclides from the flues of nuclear installations.

'James Watson has recently suggested that if Man cannot adapt to the world that science and industrial development are bringing into being, then it is Man who must be changed.'

It is hardly surprising, then, that we now suffer from a whole range of new diseases, often referred to as 'diseases of civilisation'. Professor Samuel Epstein of the University of Illinois³ and other scholars attribute a very high proportion of cancers, for example, to exposure to chemicals in the food we eat, the water we drink and the air we breathe – a thesis that is, needless to say, fervently contested by the chemical industry and the experts they sponsor (see *Your money and your life*, page 24). Ischaemic heart disease, diabetes, peptic ulcers, diverticulitis, appendicitis, varicose veins and tooth caries are also 'diseases of civilisation'.

The incidence of these diseases, by contrast, is generally extremely low among vernacular people living in their natural habitats. But as such people become exposed to the Western way of life, and in particular as they adopt the modern Western diet, the incidence of the same diseases increases dramatically. Infectious diseases, too, become much more common. As Mark Cohn, who has made a detailed study of the origins of infectious diseases, concludes: 'Almost all studies that attempt to reconstruct the history of infectious diseases indicate that the burden of infection has tended to increase, rather than decrease, as human beings adopted civilised lifestyles.'

To these problems, there is no effective technological solution. Modern medicine can do little to help, since it is largely concerned with treating the symptoms of diseases, while to control their incidence would mean taking measures that lie outside the brief of the medical profession, often reversing many of the essential processes of economic development itself.

SOCIAL BREAKDOWN

Man evolved in a rich and largely natural environment, but he also evolved as an integral part of the extended family, the lineage group and the small community. In other words, he evolved within a highly structured social environment. As economic development speeds up, however, the community and its intermediary associations disintegrate. Edward Banfield,⁴ who made a seminal sociological study of a south Italian village, was particularly struck by the alienation and demoralisation of its inhabitants, a phenomenon known locally as *La miseria*. This, he found, was not basically attributable to the lack of money or material goods – what is normally regarded as poverty – but to the isolation of the families from each other due to the absence of any wider social groupings. This he attributed to the usurpation by the state of the basic functions which the village should normally assume.

With the development of modern industry, the extended family itself disintegrates until we get an atomised society, of which all that is left of the original social structure is a truncated nuclear family. Even that is eventually subject to further degradation and we end up with the one-parent family which, in the worst case, can disintegrate still further into its individual members. Not surprisingly, people in such conditions become increasingly unhappy and depressed. A study undertaken in the United States documented how people born after 1950 were 20 times more likely to suffer depression than those born before 1910.⁵ And such depressions are afflicting much younger people than before.

The great French sociologist Emile Durkheim referred to the alienation suffered by people deprived of a satisfactory social environment as 'anomie'. And there is increasing evidence that deprivation of a satisfactory family environment will affect children profoundly, and colour every aspect of their later lives. Such children are often referred to as emotionally disturbed. However bright they may be, they will tend to

find it very difficult to fit into their society, the reason being that the early and most important stages of their socialisation were badly impaired. Predisposed to pathological forms of behaviour such as delinquency, drug addiction, alcoholism and schizophrenia, their lot can often become hopeless.

Such hopelessness has been a feature of the welfare-maintained ghettos of the larger American cities for decades. Oscar Lewis⁶ describes the inhabitants of such areas as having a 'strong feeling of fatalism, helplessness, dependence and inferiority. Other traits include a high incidence of weak ego-structure, morality and confusion of sexual identification, or reflecting internal deprivation, a strong present time orientation, with relatively little disposition to defer gratification and plan for the future, and high tolerance of psychological pathology of all kinds. There is widespread belief in male superiority, and among men, a strong preoccupation with machismo...'

Lewis refers to this as 'the culture of poverty', and sees it as a feature of the slums of the industrial world. Today, however, it is spreading to other sectors of society and, at the current rate, it could even soon be the culture of industrial society as a whole.

Meanwhile, crime, which is increasing at a record rate just about everywhere, is closely connected with social alienation, the victims of which react in a number of different ways to their plight. One reaction among young slum dwellers is to organise themselves into street gangs – a rudimentary community that provides them at once with an identity, a goal structure, an embryonic cultural pattern and a means of achieving recognition and success, at least within their particular group.

Another reaction to social alienation, more common among middle-class youth, is to indulge in some form of retreatism, isolating themselves from a way of life and an environment that increasingly fails to satisfy basic psychological needs. For American sociologist Robert Merton,⁷ 'defeatism, quietism and resignation are manifested in escape mechanisms, which ultimately lead him to 'escape' from the requirements of the society.' One obvious form of retreatism is alcoholism. Another is drug addiction, and the incidence of both increases dramatically with social disintegration. These, along with many forms of mental disease tend to increase with social disintegration, as does the ultimate escape – suicide.

Durkheim⁸ regarded suicide as the ultimate manifestation of anomie. In one study, he found that the suicide rate was particularly low in poor rural communities where social structures were intact and high in disintegrated affluent society, especially among the working classes. He goes so far as to say that 'suicide varies in inverse proportion to the degree of integration of the social groups to which the individual belongs'.

BLAMING THE VICTIMS

The reaction of the political establishment to the increased incidence of these social aberrations is usually to blame the victims, who are seen to be deficient in one way or another. More and more often this is seen as an inherited problem and attributed to a faulty gene. Thus, a recent US government study on depression cited above attributed its growing incidence to a genetic cause. Criminals are often made out to be men with an x and two y chromosomes, rather than the usual single x and y chromosomes. Another ploy is to attribute these social aberrations to purely economic factors. They are often seen to be caused by poverty,

interpreted in purely economic and material terms – conveniently ignoring that the incidence of these social problems is extremely low in the 'poorest' Third World countries, where social structures have not yet disintegrated. One can wander, for instance, in total security through the worst slums of Calcutta where hundreds of thousands of people are condemned to sleeping rough on the pavements, for there the extended family is still largely intact.

Today, in the West, such aberrations are also often attributed to unemployment and the present running-down of the Welfare State. These are undoubtedly important factors, but they do not provide a sufficient explanation, since such social problems were also increasing in the 1960s and early 70s, when unemployment levels were low and the social services still highly funded.

In fact, what is really going on here is a lot more sinister; for such interpretations of our increasing social malaise serve to conveniently rationalise further economic development – which is presented as the only means of combating any social or economic problem. That economic development has itself brought these problems into being is never countenanced in political nor academic circles, for it remains the overriding goal of government policies throughout the world – a goal which continues to serve the interests of those who promote it.

CAN WE ADAPT?

Not only are we becoming increasingly biologically and socially maladjusted to the environment that modern development is creating for us, but our thinking processes are maladjusted too. Man's instinctive cognitive, or mental, adjustment to the natural environment was always clear to tribal and traditional societies. It was the first article of faith in Goethe's philosophy of nature that there is 'a perfect correspondence between the inner nature of Man and the structure of external reality, between the soul and the world'.⁹ Henry David Thoreau referred to it as 'nature looking into nature'.¹⁰ As our environment is forcibly changed beyond the limits to which we have been adapted to it by evolution, however, our perceptions become ever less useful for understanding it and for helping us to adapt to it. We cease to be what we might call cognitively adjusted to it. As E M Forster asked, 'How can Man get into harmony with his surroundings when he is constantly altering them?'

The Canadian biochemist, Professor Ross Hume Hall, for example, has suggested that we are cognitively maladjusted to eating modern processed foods and, as a result, are incapable of behaving adaptively towards them. To quote him: 'Nature endowed us with the capacity to determine nutritional quality and safety so long as it was natural. For example, we can distinguish between corn fresh

from the stalk and corn a day old.

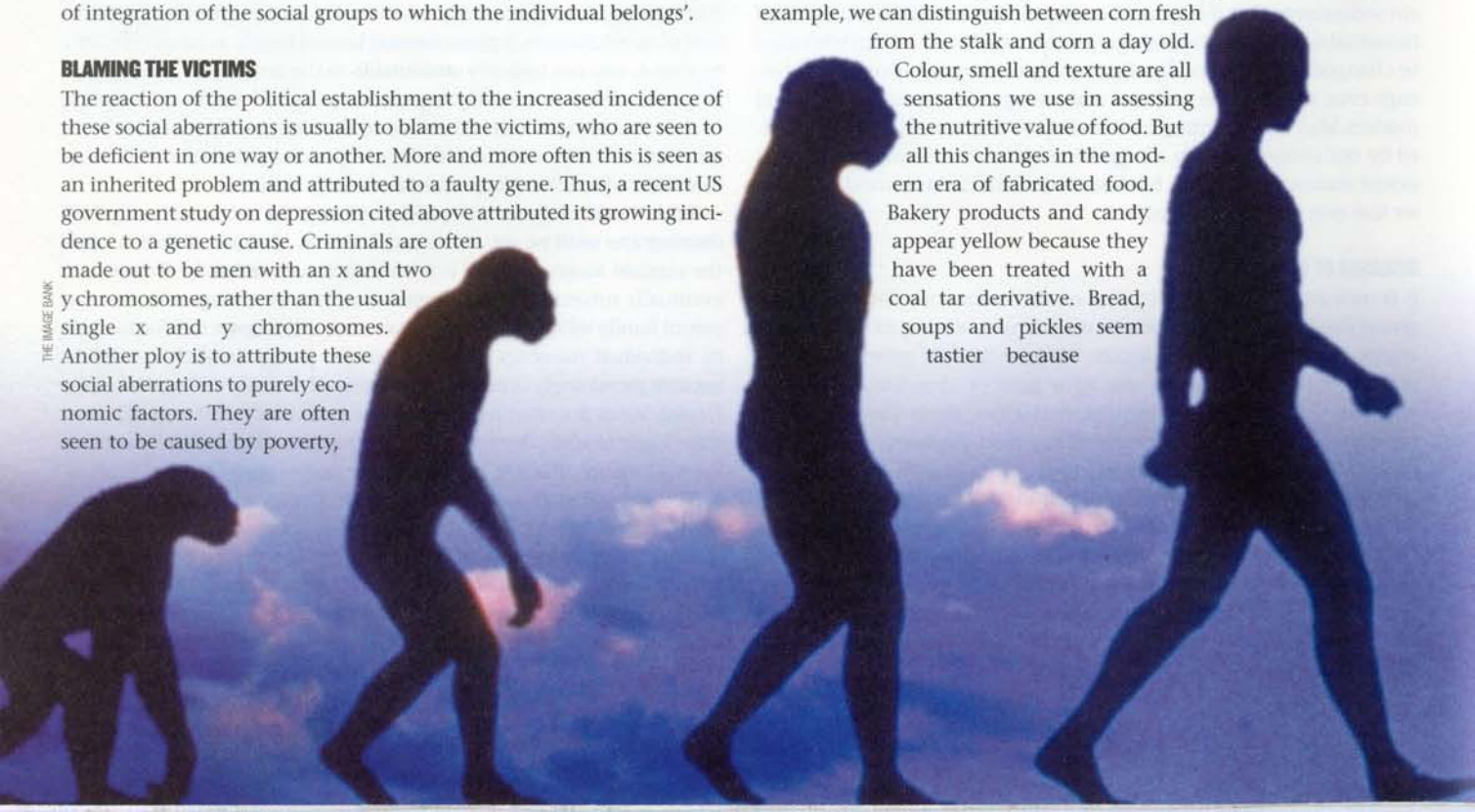
Colour, smell and texture are all sensations we use in assessing the nutritive value of food. But

all this changes in the modern era of fabricated food.

Bakery products and candy appear yellow because they have been treated with a coal tar derivative. Bread,

soups and pickles seem tastier because

tastier because



they contain sugar. Meat appears fresher because it contains sodium nitrates to inhibit bacterial growth. Net result: the taste of fabricated food is no reliable guide to freshness, nutritional quality, or whether the food will eventually kill you.¹¹

It is not only our senses, but our very intuitive faculties that cease to provide us with the necessary adaptive knowledge. Thus, whereas our ancestors had no difficulty in understanding their relationship with the living world, we have no means of understanding our relationship with the surrogate world we have created. We depend for counsel on experts who are rarely objective and, even if they were, are unlikely, because of the reductionist nature of their training, to be capable of taking into account all the relevant factors involved.

WHEN INSTINCTS FAIL US

It is not only our senses and our intuitive faculties that fail us in the Brave New World to which economic development is giving rise; our very instincts cease to serve as a guide to behaviour.

A typical example is our instinctive aggressivity. In a vernacular society, aggressive behaviour is highly ritualised and serves social ends. Its destructiveness tends to be limited because vernacular technology is under social control, which means that wars are fought with traditional, and hence not particularly lethal, weapons. All this changes dramatically with economic development, when the associated social and cultural destruction deprives us of the means of controlling our aggression and of preventing the development of the most lethal and instruments of mass destruction.

Under such conditions, we bring into being a world that has diverged so drastically from that to which we have been adapted by our evolution that the very mechanisms with which evolution has endowed us for maintaining the stability of our societies now serve to achieve the opposite end. Professor E O Wilson, and other proponents of perpetual progress, consider for that reason that 'we must suppress our instinctive drives and our emotions'.¹² But if we are to adapt to the increasingly disjointed and unnatural world that modern development is creating for us, it is not apparently just our aggressivity that must be suppressed – it is also those instinctive drives and emotions that make of us religious as well as social beings – for only in this way can we adapt to living in today's atomised, competitive, secular world.

Undoubtedly the most alarming instance of cognitive maladjustment must be our failure to grasp the critical nature of the global environmental problems that confront us – such as deforestation, soil erosion, salinisation and desertification, the depletion of

the ozone layer and global warming.

Only a tiny minority of our academics – not to mention our industrialists or politicians – show any concern at all for these daunting problems, and no measures of any consequence have been undertaken to solve them. At conference after conference, politicians from the main political parties discuss the usual short-term populist issues, obstinately refusing even

to mention (save perhaps in a most cursory manner) the real issues that must determine our future and that of our children.

It may not be irrelevant to note that even very modest forms of life, like earthworms, dung beetles and fiddler crabs, while living in their natural environment, have no trouble identifying the real problems they must deal with if they are to maximise their welfare and indeed survive.

THE EXISTENTIAL VACUUM

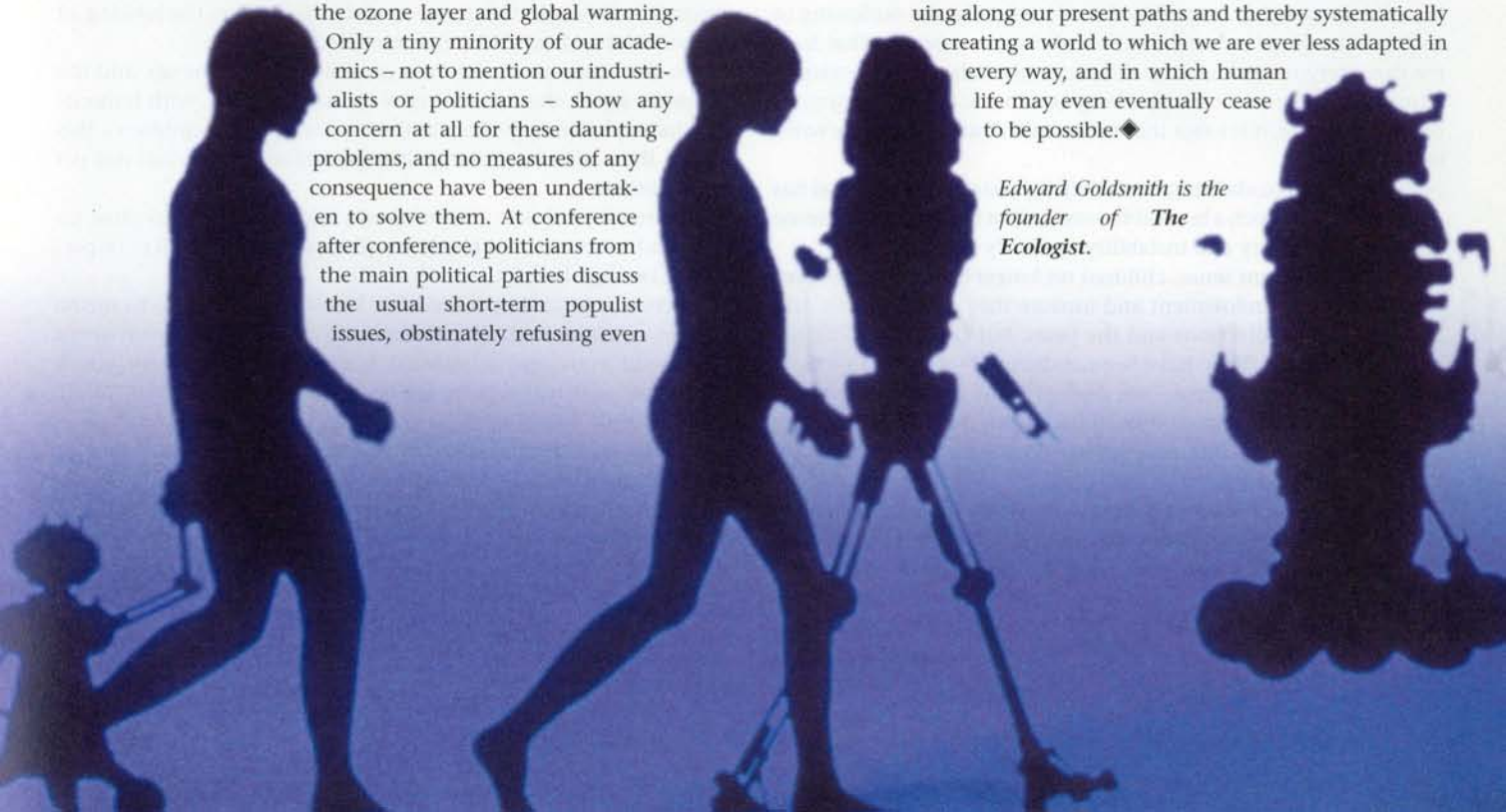
In addition to all this, we are increasingly suffering from another critical form of maladjustment; psychological maladjustment. As modern science progresses, it depicts our world and our relationship to it in terms that have ever less meaning to the human psyche. As Alexander Koyré, perhaps the foremost Newtonian scholar of his day, puts it: 'it has substituted for our world of quality and sense perception, the world in which we live and love and die, another world – the world of quantity, of rectified geometry; a world in which, though there is a place for everything, there is no place for Man'.

The Austrian psychologist Victor Frankl believes that one in four neuroses can be traced to our 'existential vacuum' – the meaninglessness of life.¹³ This vacuum is deepened by the scientific view of Man as no more than a machine, responding robot-like to environmental stimuli. Our innermost feelings, values and beliefs are little more than illusions; our family, community, society, the natural world itself, are no more than a mass of atoms and molecules – random, purposeless and uncaring.

In fact, in terms of our evolution and our social development, Man is mentally adjusted to entertaining a 'traditional' world view, in terms of which all the constituents of the natural world – whether they be animal, plant or mineral – radiate meanings, are intelligible beings, integral parts of a cosmic whole. The French biologist and Nobel Laureate Jacques Monod admits that vernacular Man, or 'animistic Man' as he refers to him, could see himself as an integral part of the natural world. 'Animism,' he writes, 'established a covenant between Man and nature, a profound alliance outside of which seems to stretch only terrifying solitude.'¹⁴ But today, science has revealed to us the truth: 'The ancient covenant has been broken, Man knows at last that he is alone in the immensity of the universe – a universe in which he has no function, to which he has no duties and in which he emerged by pure chance.'

Yet this is not the view of the German philosopher of science, Gunther Stent. 'The dissolution of the covenant,' he writes, 'presages the end of science, since there is little use in continuing to push the limits of our knowledge further and further if the results have less and less meaning to Man's psyche'.¹⁵ Nor, either, is there much use in obstinately continuing along our present paths and thereby systematically creating a world to which we are ever less adapted in every way, and in which human life may even eventually cease to be possible.◆

Edward Goldsmith is the founder of The Ecologist.





COMMENT

THE ASSAULT ON CHILDHOOD

BRITAIN'S FEAR OF PAEDOPHILES SAYS JEREMY SEABROOK SHOULDN'T MASK THE OTHER, SUBTLER THREATS TO TODAY'S CHILDREN.

THE RECENT PAEDOPHILE frenzy in Britain has allowed us to gloss over some of the wider, more subtle and perhaps more insidious dangers faced by today's children. For the modern world has eroded many of the family securities on which the young have traditionally relied; and alongside this erosion flourishes an industry which first secures and then preys on childhood insecurities.

The nature of the modern family places pressure on children. The presence of so many stepmothers and stepfathers, mother's new boyfriends and father's new girlfriends, the existence of a whole network of new aunts and uncles and Julies and Steves and pseudo-siblings has had very significant consequences for children. It has meant that unrelated adults, acquaintances and strangers have an easy passage into the household of the fragile family unit. This, in turn, places pressure upon one the basic mechanisms of family cohesion and survival. And given the number of strangers and non-kin who have instant access to the contemporary family, the most delicate taboo of all – the incest taboo – is itself under threat.

The incest taboo means the absolute prohibition upon sexual relations between people related by blood. But when kinship itself is elastic, elective and eclectic, as it is in the increasingly fragmented modern family, the outlawing of such relationships becomes weaker. All the more reason that fears for the safety of children are directed outwards – at the stranger lying in wait for them on their way to school. Such strangers, of course, exist, but it is a fact that most child abuses take place within the family.

But what has made human relationships so perishable; what has made the family such a breakable vessel; what has created the sense of chronic volatility and instability in family life?

In one significant sense, children no longer belong to their parents. By genetic endowment and nurture they do, of course, and by virtue of the affections and the years; but culturally, children belong elsewhere. They have been abducted by the Pied Piper of peer-group and commerce – the desire for the must-have toy, the latest accessory, the newest logo, the fashionable style, the earring and the nose-stud – he's only eight, she's only seven, but they know what they want.

This is a kind of cultural fostering in which the role of parents is reduced to agents providing the money to buy in what is needful for a rich and complete childhood. The effect of the market upon children is a slow and constant social estrangement from those who love them. This is quite different from the traditional way in which children grow, become independent and



CHILDREN HAVE BEEN
ABDUCTED BY THE PIED
PIPER OF PEER-GROUP
AND COMMERCE

autonomous. This is not autonomy, it is dependency, market dependency – and that this curious aberration is regarded as normal is part of the social costs incurred by our version of material improvement.

Access to the heart of the family by those whose business is the interference in the relationship between parents and children is now almost limitless. The advertisers and promoters of merchandise, the hucksters and targeters of children are given free passage into the homes of the people: this is why a television set is now regarded as an absolute basic necessity among the poorest households in the West. It is the window through which children are reached over the heads of parents, through which alien whispers from an inaccessible elsewhere become a major determinant upon their consciousness. This is how the paradox arises of children never more exposed to the world and, at the same time, never more protected from it.

And yet serious discussion of these issues is inhibited by other taboos. The

reluctance of adults to grow up has been observed in recent times – adult toys, the market in products for the preservation and prolongation of youth, the desire to stave off old age, the junking of the wisdom and experience of the elderly.

On the other hand, children cannot wait to grow up, and the fashions, styles, the sexualising of miniature adults, with fashions and hairstyles and jewellery and self-adornment of children – this makes them also into strange beings, neither quite adult nor yet still children.

The result of this is a meeting of children rushing to grow up and adults desperate to retain youth in a kind of mimicry of perpetual teenagedhood.

There is something provocative, knowing, precocious in media images of childhood. The distinction, not only between where childhood ends and adulthood begins, but also where youth ceases and maturity sets in, are becoming equally blurred. While tabloids and cynical politicians rush to take advantage of a powerful wave of revulsion directed, understandably, at paedophiles, other villains have other designs on children, such as exploitation, taking advantage of their vulnerability and unknowing, and certainly coming between them and the slender control their families exercise over them. They're doing all this, and for the most part they are going scot-free.

Jeremy Seabrook is a writer and journalist.

STEVE CARROLL

TITLE: THEARTARCHIVE

IS ORGANIC ENOUGH?

HELENA NORBERG-HODGE SAYS ORGANIC FOOD IS ALL VERY WELL
– BUT IF IT'S NOT LOCAL, IT'S STILL JUST PART OF THE PROBLEM.

FOOD AND AGRICULTURE around the world is being threatened as never before by corporate agribusiness and international 'free' trade. Small, sustainable, diverse farms producing food for local communities are being wiped out; replaced by vast chemical-intensive agribusinesses producing single crops that are eventually sold via supermarket chains on the other side of the world. Year by year the farms grow larger, the transportation distances grow longer and the retailers grow ever more powerful.

The bizarre result of this process is that fresh, local food – once the staple of everyone's diet – is fast becoming a luxury for the wealthy elite. The latest example, in the West, of such 'luxuries' is the popularity of organic food. Public concern about the intensive use of agrochemicals has led to a rapidly-growing and welcome demand for organic produce. Demand for organic food in Europe is shooting up at around 100 per cent per year. And this, of course, is a good thing – but only as far as it goes.

I say this because, if organic food operates as part of the same unequal and destructive global trading system as any other foods, it will not, in itself, prove any kind of panacea. Already we see that as demand for organic food has increased, supermarket chains have overtaken local shops in supplying it, and already account for 67 per cent of UK sales. In addition, the perverse logic of the international market means that 90 per cent of organic food purchased in the UK is now imported.

Meanwhile, supermarkets are starting to press organic regulatory bodies to reduce standards on the use of chemicals, on animal welfare and on food additives, whilst forcing organic farmers, through their market dominance, to specialise in single crops and to standardise the visual appearance of products. Intensively advertised, sugar-packed 'organic' junk foods are beginning to appear. It is clear that organic food threatens to become a mere commodity to be marketed and speculated upon like any other commercial product.

We have a problem, then, and organic food is increasingly a part of it. In the past, buying organic food generally meant supporting smaller, more-diversified farms. Today, if we want to oppose the globalisation of food and to restore sane, sustainable, human-scale agriculture – and we must – buying organic can only be a small part of the solution. It still helps, of course, but it doesn't tackle the really big issue: the global economy itself.

If we want to tackle all this, far more can be achieved through campaigns to buy locally grown food from local shops, farmers' markets or directly from farmers via box schemes, than we can ever hope for through buying from a supermarket's range of organic vegetables. And, as always, local is the key. When farmers cater for local markets they naturally diversify their crops to supply as many



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products as possible. This enables crop rotation, interplanting and other techniques that vastly improve the efficiency and productivity of organic farms (and that traditionally offered organic agriculture an alternative to fertilisers). Such campaigns would not only reduce chemical use but also cut packaging, transport and food processing, promote biodiversity and revitalise local communities and rural economies.

Buying locally grown foods through local shops also helps to keep cash circulating within the community rather than draining away to distant corporations. This benefit can be enhanced still further if shops and residents start to use 'local currencies' that stay within the community indefinitely.

But it's not as easy as it sounds, for there are national and international obstacles that need to be overcome if we are to obtain locally grown natural food at a reasonable price. For a start, international trade treaties that give corporations the power to overrule national regulations and cancel import tariffs need to be rewritten or scrapped. Nations must have the right to exercise the precautionary principle and restrict

the import of foods that may threaten their citizens' health. Second, government subsidies on roads, fuel and taxes need to be replaced by taxes on these forms of waste. Currently, virtually all government subsidies to business – which include the construction of international road networks, airports and container ports, the supply of cut-price fuel and agrochemicals and the provision of free loans – benefit only larger export-orientated enterprises and so give them a massive advantage over local food production.

Finally, strict hygiene regulations, designed in response to the dangers of battery farms, vast factories, long storage times and highly processed mass-produced foods, need to be reviewed. The 'revolving door' between governments and big businesses enables them to design regulations that cost too much for small companies while avoiding those that inconvenience corporations. A rational and responsible solution would be to tighten up the regulations on globally-traded foods while allowing local communities to set their own regulations on locally-produced and traded foods.

So keep buying organic, by all means – but supporting the local food movement is the most strategic way to reverse a whole range of social and environmental problems in both the North and the South. It may also be one of the most satisfying and enjoyable ways to save the world.

Helena Norberg-Hodge is a director of ISEC (International Society for Ecology and Culture).

WORN AS TOAST

RUSSELL MOKHIBER AND ROBERT WEISSMAN TELL A SIMPLE TALE OF MODERN CONSUMERISM.

ABOUT SIX YEARS ago, a friend gave us a toaster. It was a present. The friend bought the toaster from Williams-Sonoma, the kitchen store which has outlets in malls throughout the US. It was a modern toaster, which means first, that it was made primarily out of plastic instead of stainless steel, second, it had all kinds of gizmos on it, and third, if something goes wrong with it, in all likelihood, because of the modern electronic devices embedded in it, you won't be able to fix it.

STEVE CARROLL

This toaster lasted about two years before it stopped toasting. Luckily, Williams-Sonoma will replace any item if you are 'not satisfied with your purchase for any reason'. So we took it back to the store here in Washington, DC and told the sales clerk that we received the toaster as a present purchased from Williams-Sonoma and that the toaster wasn't working. The sales clerk said - no problem, here's a new one.

She handed over a brand new Kenwood Four Slice plastic toaster, which lasted a little longer than a year, before it stopped toasting. So, we took the Kenwood back and told the clerk at the store what happened and the clerk said - no problem. She handed over a new toaster - a Toastronic Ultra.

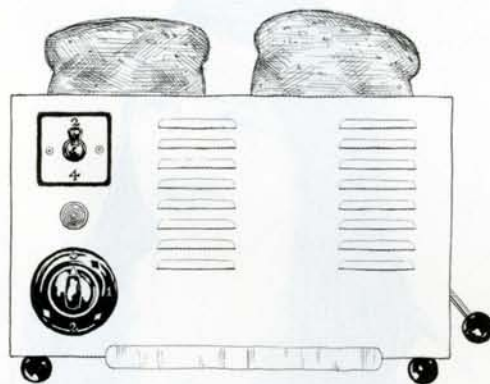
The following year, same problem. And same solution. We turned in the Toastronic Ultra and received a Kitchen Aid Toaster.

Last week, the Kitchen Aid Toaster stopped toasting on one side. We took it in to Williams-Sonoma, where the clerk handed over a Cuisinart plastic toaster.

The Cuisinart toaster has all kinds of features, including a bagel button, a defrost button, a reheat button, the now traditional lighter and darker buttons, a cancel reset button, and most annoyingly, a 'shade control' panel, which in bright red lights (just what you don't want to see in the morning) tells you where exactly, on a scale of very light toast to very dark toast, you have calibrated your toaster this morning.

We have a friend who believes that toasters should last a lifetime (forgive him - he is from a different era). He gets one of these new plastic toasters, and the plastic lever falls off. Now, everytime he wants toast, he throws caution to the wind and sticks a butter knife into the slot to hold down the lever until it clicks in. Annoyed at this repeated failure of modern technology, we called Williams-Sonoma's customer service line. The sales person answered and we told her our story about returning the plastic toasters periodically to her store. She said she didn't think she could do anything about the complaint.

We asked, why not just sell a toaster that lasts? And she said, we do. It's the stainless steel Dualit Combi Toaster and it sells for



IF YOU DON'T WANT TO
CLEAN THE CRUMBS OUT
OF YOUR TOASTER, YOU
CAN JUST GET RID OF IT
AND BUY A NEW ONE

\$319.00. The plastic Cuisinart that we just received sells for \$99.95. 'You can buy the Dualit and it will toast for you well into your 90s,' she snickered.

In San Francisco, Williams-Sonoma spokesperson Tracy Brown told us that her store tries to sell the 'newest and greatest' products. She said that complaints about toasters breaking down 'are not common'. Later, she called back to report that 'we identified reliability problems with the Kitchen Aid and that's why we got rid of it'.

'We really believe that the Cuisinart toaster will last,' she said.

Now, of course, we remember our parents' toasters - the aluminium Toastmasters that lasted a lifetime. These classic toasters had no bagel button, no defrost button, no reheat button, and definitely no shade control panel. You simply stuck the slices of bread into the slot, pushed down the lever, and waited for the toast to pop up. So, with all the wonders of modern technology, why can't the companies make a reasonably priced toaster that lasts?

We put this question to Holly Smith-Berry, marketing director at the Missouri-based Toastmaster corporation, the company that sold the first pop-up toaster in 1926 for \$12.50. 'We get letters from our customers, wanting to send us their old Toastmaster toasters, telling us they love the triple loop design on the side of the toaster, and they are amazed at how long they have lasted - 50 or 60 years, in some cases,' Smith-Berry said. 'But if you took our 1940 steel toaster and costed it out for inflation, it would cost \$170 today.' She said that Toastmaster toasters today range from \$10 to \$30 and they are tested to last for 12 or so years.

'We've seen toasters selling in Wal-Mart for \$7.96,' she said. 'So, if you don't want to clean the crumbs out of your toaster, you can just get rid of it and buy a new one.'

'Unfortunately, we live in a more disposable society,' she says.

Toastermaster also makes a heavy duty toaster, but it's built in Germany by Bosch Siemens, designed by Porsche, and sells for \$225.

The decline of the reliable, reasonably priced toaster is symbolic of what's gone wrong with modern society - shoddy products, disposable society, planned obsolescence, high-tech but no respect.

Shade control in, quality out.

Russell Mokhiber is editor of the Washington DC-based Corporate Crime Reporter. Robert Weissman is editor of the Washington, DC-based Multinational Monitor. They are co-authors of Corporate Predators: The Hunt for MegaProfits and the Attack on Democracy (Monroe, Maine: Common Courage Press, 1999).

TWO WHEELS GOOD, FOUR WHEELS BAD

JIM MCGURN SAYS THAT IF ENVIRONMENTALISTS REALLY WANT TO MAKE A DIFFERENCE, THEY SHOULD GET ON THEIR BIKES.

I REMEMBER ONCE seeing a cartoon in a US newspaper. Planners in City Hall were desperate for a fast solution to their city's traffic problems. They needed a mode of transport which was cheap and easy and could use existing roads. It had to give independent mobility but leave the community and environment unharmed. As they wrestled with their search for the mega-solution, a cyclist passed by, unseen, unacknowledged, and smiling.

There are plenty of reasons for cyclists to smile. On a bicycle you can travel up to 1,037 kilometres on the energy-equivalent of a litre of petrol. You use less energy than a car uses simply to power its headlights. You travel four times faster than you can walk using the same amount of energy. You consume a fiftieth of the oxygen consumed by a motor vehicle, and expel no pollutants. You provide a motor which improves its own strength and efficiency and even its working life the more it's used.

But if bikes are so good, why have they become so invisible? Why does the car culture hurtle on regardless? Perhaps they're too harmless for their own good: too available and cheap for big business to take seriously. They are a form of independent and virtually uncontrollable private transport at odds with every other road transport system, including buses. Perhaps the problem is that cycling requires us to make our bodies do something useful. We've spent a century scrapping manual jobs, and turning sport into a spectator activity. Physical fitness is now packaged as a consumer item, to be enjoyed in private gyms and expensive leisure centres. To keep fit while you have fun just transporting yourself around is so sensible it verges on the subversive.

The bicycle testifies to the importance and beauty of the human body. It takes us where we want to go, and makes streets great places to be, rather than to drive through. The cry goes up from politicians all the time to get youths off the streets – but that's exactly where they should be. It's where we all should be, enjoying our streets and communities. Instead we've opted for private, internalised pleasures. Beautiful rooms, in our hide-away houses. The cabin-calm of the luxury motor car, while all outside is perceived as confusion and squalor – with a few smiling nutters on bikes who won't go away.

Cycling is slowly returning to the cultural agenda in many Western countries. But it's wobbling in the direction of the same package leisure industry which gave us the gym. Beware the smiling family on mountain bikes wearing slick cycling gear, and rid-



PHYSICAL FITNESS IS
NOW PACKAGED AS A
CONSUMER ITEM, TO BE
ENJOYED IN GYMS AND
LEISURE CENTRES

ing on a scenic, safe and undemanding cycle path somewhere not near you. Beware the muscular young males in the bike adverts. Fashion cycling is a cultural cul-de-sac, with little to do with practical transport.

The arguments for cycling have long since been won, and yet pedal-power is not on the increase. Many of us are in a hole, having to live with facilities spaced out at car-driving distances. There is no paradise round the corner. Road cycling is hardly considered by the anxious or inexperienced. Sustrans, builders of the UK's National Cycle Network, are going great guns, but their paths are for leisure use, and do little for commuters. The government has failed to take cycling seriously, and has quietly abandoned its targets for traffic reduction and increased cycling, denying a basic freedom to millions.

Nor has the green movement served cycling well. Friends of the Earth have long since done without a cycle campaigner, and there seems to be a sentiment abroad that all will be well once the boffins come up with cleaner fuel. This is the stuff of fantasy. Even the cleanest 'eco-cars', if they ever come about, will still kill and maim, demanding roads which distort and destroy communities.

They will make it all the more acceptable for us to transport our (and our children's) unfit bodies around in a ton of moving metal.

Paradoxes abound in many an 'alternative' lifestyle. I myself learned to drive at the age of 37. After years of round-town cycling in the compact city of York, I had moved to a permaculture community in the Scottish Borders, only to find that working life without a car was close to impossible. I now live in York again. Green magazines rarely mention cycling, and even the Green Roadshow has no cycling element to it.

Yet the bicycle comes in many forms. A new generation of cycle engineers are offering alternatives to the mass-produced mountain bikes of Taiwan. There are now astonishing new city bikes with full suspension, ingenious folding bikes for taking onto public transport, load-carrying cycles for bringing home the shopping, multicycles for riding *en famille*, and sleek recumbents for going faster. The pedal-powered solutions are out there, ready to make a difference to parts of our lives. Few ecologists can have a moral alternative.

Jim McGurn, of publishers Open Road, is co-publisher of Bike Culture Quarterly, Bicycle Magazine and Encyclopedica, an annual guide to alternatives in cycling: www.Encyclopedica.com

SPECIAL OFFER As a special offer to *Ecologist* readers wanting to learn more about cycling, Open Road will supply a pack containing each of the current editions of their publications, plus other cycling material for £12.00 including postage: half the normal cost. Telephone 01482 88 03 99, and mention *The Ecologist*.

CLIMATE DEBATE HEATS UP

**PETER BUNYARD LOOKS AT AN IMPORTANT NEW REPORT
ON RESPONSES TO CLIMATE CHANGE IN THE UK.**

WHAT A DILEMMA we are in. Here we are, bitterly complaining that the government is stifling our basic rights to transport ourselves wherever we want, whenever we want, by taxing us 83 pence for every pound spent on fuel, and the next minute we are pitying those in Bangladesh, Venezuela, Nicaragua and Honduras who have lost all in torrential rains and mudslides. Yes, we should know the connection: every drop of petrol we burn, every flick of the switch, every visit to the supermarket – all contribute to climate change and the catastrophe it could engender.

Maybe in 10 years' time, as a result of John Prescott's £180 billion 'Transport 2010' package, more of us will be able to whizz comfortably and speedily around the country, whether in our cars or on rail – but just where will that leave our emissions of greenhouse gases? Can we continue to run our gas-guzzling '4x4 sports-utility vehicles', consume what takes our fancy even if it has taken 4,000 miles to get to us, switch on all the appliances we care to, take off for the farthest reaches of the world on holiday and yet avoid the consequences of global warming? In short, can our modern way of life be made compatible with the necessity to prevent runaway climate change?

MULTI-BILLION-DOLLAR QUESTION

For Britain, at least, the Royal Commission on Environmental Pollution has tried to answer that multi-billion-dollar question in its recently published 22nd Report. Under the European Union's response to the Kyoto Protocol, the UK is committed, in the years leading up to 2010, to reducing annual carbon dioxide emissions by 12.5 per cent compared with the baseline year of 1990. With some bravado, the gov-

TITLE: BRODEMAN ART LIBRARY

ACCORDING TO A new report from the Royal Commission on Environmental Pollution, the UK's energy use is inefficient and set to massively increase – with serious implications for greenhouse gas emissions. But there are solutions if we are prepared to be radical.



ernment is proposing we should aim for a 20 per cent cut. A laudable target, no doubt, but the Commission is concerned that on current performance, not only will the UK have difficulty reducing its greenhouse gas emissions by more than 8 per cent a decade hence, but that even the 20 per cent target falls far short of what will be required if the UK is to

play its part on the global stage. Indeed, the Commission regards an atmospheric carbon dioxide concentration of 550 parts per million (ppmv) – a doubling of pre-industrial levels, 'as an upper limit that should not be exceeded'.

We are now at 370 ppmv, more than 30 per cent up on pre-industrial levels, and adding some 1.5 ppmv a year to the total accumulating in the atmosphere. In fact, had the world stayed at the emission levels of 1990, a century from now the atmospheric concentrations of CO₂ would exceed 500 ppmv and still be rising. But, as we pointed out in the climate-change issue of *The Ecologist* (Vol 29 No 2, March/April 1999, p 75), current emission rates are far higher than those of 1990 and, were current trends to continue, would take CO₂ concentrations to 1,300 ppmv a century hence. The consequences could be mean global temperature rises of as much as 10°C.

Were the world to carry on business-as-usual and burn off total fossil fuel resources over the next couple of centuries, the result would be a concentration of CO₂ in the atmosphere three times pre-industrial levels a century hence, and six times pre-industrial levels two centuries on. Even that horrendous prospect takes no account of climatically driven feedbacks, such as the venting of carbon dioxide from warmer oceans, or the dieoff of tropical forests and ocean plankton.

PLAYING OUR PART

Nothing else will do, if we take the Commission's concerns seriously, but to restrict ourselves to a scenario in which the UK plays its part in keeping final CO₂ levels in the atmosphere below 550 ppmv. And this, perhaps, is where the Global Commons

ENVIRONMENTAL IMAGES

Institute (GCI) comes in. For years, GCI has been plugging away at the notion of global equity and intrinsic rights to a quota of emissions. GCI has elaborated a timescale for a programme of 'contraction and convergence', in which the 'over-emitters' – the highly industrialised nations – cut right back, whilst the 'under-emitters' catch up to an intermediate point. The consequences for the UK, were it to adhere rigorously to the idea of contraction and convergence 'could imply,' says the Commission, 'a reduction of 60 per cent from current annual carbon dioxide emissions by 2050 and perhaps of 80 per cent by 2100'. As the Commission concedes, such changes would have massive implications for energy use in the UK, and the 22nd Report is all about marshalling such changes.

At present, average emissions in the UK are currently some 2.5 tonnes of carbon per person, compared with 5.5 tonnes in North America and just over 1 tonne per person globally. The current world total, some 6 billion tonnes of carbon, needs to be reduced by two-thirds if CO₂ concentrations are to be kept below 500 ppmv. On that basis we in the UK would need to achieve a sevenfold cut in our greenhouse gas emissions.

In Britain, we consume some 300 gigawatts (GW) of primary energy, which is approximately one-fortieth of world consumption. Because of inefficiencies in the system, including the loss of low-grade heat from power stations, our final consumption is nearly one-third lower, at 210 GW. Not shown in that 'wastage' is the considerable energy we expend in our motor vehicles, especially when we add up the number of frivolous or unnecessary journeys. Transport has become the most significant end-user of energy, demanding 34 per cent of primary energy, followed by households with a 30 per cent demand, manufacturing industry with 22 per cent and commercial and public services with 14 per cent.

Almost 90 per cent of our energy comes from fossil fuels, with oil providing us with about one-third of our primary energy and natural gas, a relative latecomer, now providing 37 per cent. In 1960, coal's share of primary energy was 74 per cent; today its share is 18 per cent. The decline in coal-burning and its substitution by natural gas has been a fundamental reason why Britain's overall greenhouse-gas emissions have declined since 1990, making us one of the few nations to be complying with the Kyoto Protocol. One-third of primary energy use in the UK is for electricity generation, which has increased its share of final user consumption from 7 per cent in 1960 to 17 per cent in 1998,

indicating the rapid increase in electrical appliances as well as convenience of use.

ENERGY CONSUMPTION

An important measure of the efficiency of the economy is energy intensity, which is defined as the ratio of primary energy consumed in the UK to gross domestic product (GDP). In 1998 energy intensity was 0.4 W/£ GDP compared with 0.72 W/£ GDP in 1960, indicating both improved efficiency in the use of energy for generating GDP and some structural changes in the economy, such as the decline in energy-intensive industries like the steel industry. However, in comparison with its European neighbours, the UK is less energy efficient and, moreover, has a higher carbon intensity in that it emits more carbon dioxide to GDP than the other member states of the European Union.

Cheap and falling fuel prices, certainly in terms of fuelling power stations, have led to unnecessary inefficiencies of energy use and to fewer wind machines and other renewables getting off the ground than anticipated 10 years ago. The fossil fuel levy and the non-fossil fuel obligation (NFFO), instituted by the Thatcher government, intent on shoring up nuclear power in preparation for privatisation, certainly helped get the first wind farms up and running. But most of the NFFO subsidised contracts have gone to plants burning municipal and agricultural wastes or siphoning off landfill gas. In the last round of bidding, the fifth since the NFFO was initiated, municipal and industrial waste projects

'Unless measures are taken, according to the DTI, energy used by transport will rise by 28 per cent between 1996 and 2010, with CO₂ emissions increasing by 18 per cent.'

account for 41 per cent of the electrical capacity contracted for; wind farms for 29 per cent and landfill gas for 27 per cent.

Households in the UK consume nearly 30 per cent of the nation's primary energy, with a 25 per cent overall increase in the 25 years between 1973 and 1998. The construction of new housing to high energy efficiency standards and using CHP (combined heat and power) fuelled by biomass will achieve, in the Commission's opinion, the best results in reducing household energy demands, both in terms of needing less energy and in the use of fuels that have negligible net CO₂ emissions. The Peabody Trust has begun construction on just such a housing scheme in Sutton, south

London. The 80 town houses, maisonettes and apartments, plus offices in the Beddington Zero Energy Development, will require no more than 10 per cent of the heat used in a conventional home. The fuel for the CHP will come from the prunings and cuttings taken from the parks in nearby Croydon.

Between 1973 and 1998 the energy consumed in the transport sector in the UK rose by two-thirds, with its share of the total growing from 21 per cent to 34 per cent. The increases are largely because of the rising volume of traffic on the roads. Unless measures are taken, according to the DTI (Department of Trade and Industry), energy used by transport will rise by 28 per cent between 1996 and 2010, with carbon dioxide emissions from road transport increasing by 18 per cent. The technical potential exists to reduce energy consumption by 28 per cent compared to 1996, in part through more fuel-efficient cars and in part through an improved public transport system.

REDUCING CONSUMPTION

When the Commission combines the potential for saving energy in the four sectors – domestic, manufacturing, transport and services – on the basis that such measures will save money without affecting output, it finds that UK final energy consumption in 2010 could be 2 to 15 per cent lower than the 207.4 GW (gigawatts) used in 1998.

Whatever we do to reduce our final energy consumption, we still need primary energy. The challenge is to obtain it from sources that have low or no greenhouse-gas emissions. ETSU, the Energy Technology Support Unit, has assessed the quantity of electricity from renewable sources that could be made available by 2025 at a cost of less than 7 p/kWh, assuming a discount rate of 8 per cent. The total would include contributions from windpower, both on- and off-shore, photovoltaic and mini-hydro; from energy crops, agricultural and forestry waste, municipal solid waste and landfill gas; and finally from technologies under development such as wave and tidal power. At best, such renewable energies could give an annual average rate of electricity of 30 GW, which comes close to the average amount currently used. But peak demands, in winter for example, can practically double the total generating capacity required.

We should certainly be concerned at the Commission's call for farmers to turn to energy crops, which, in its opinion, 'should be regarded as a primary use for agricultural land'. It suggests that as much as 5.5 million



TOM STONE

Exhausted: car fumes are a major contributor to climate change in the UK.

hectares, representing 30 per cent of the present total of agricultural land in the UK, could be devoted to energy crops, yielding a 21.5 GW average output, equivalent to about two-thirds of UK electricity consumption. According to the Commission, 'the managed use of energy crops provides a more effective and reliable way of countering climate change than planting trees to offset continuing use of fossil fuels. A sustained programme of afforestation of 30,000 hectares per year (combined with planting of harvested areas) would sequester less than 2 per cent of UK fossil fuel emissions'.

The government target is for electricity from renewable sources to expand from its current 2.5 per cent to 5 per cent by 2003 and to 10 per cent by 2010. At that rate of deployment, the renewable electricity will fail to keep pace even with the decommissioning of nuclear power, which currently provides the UK with 28 per cent of its electricity. By 2020 the nuclear capacity will have shrunk to 2.5 GW, one-fifth its current generating capacity. Never one to give up, the nuclear industry is putting pressure on the government to build another PWR (pressurised water reactor) at Sizewell in Suffolk and, the claim is, the cost of electricity generated will be cheaper than from renewables such as windpower.

On the basis of an impending shortfall in electricity generated from sources that emit little to no carbon, the Commission recommends that the government should set

longer-term targets 'for expanding the contribution from renewable sources well beyond 10 per cent of electricity supplies to cover a much larger share of primary energy demand'.

The Commission concludes its report with four scenarios for meeting energy demand in 2050 while reducing CO₂ levels by about 60 per cent from their level in 1997. In scenario 1 final energy demand is sta-

'The conclusion is glaringly obvious. If we in the UK are serious about climate change, we will have to reduce substantially our energy demands.'

bilised at 1998 levels. The other three scenarios all entail reductions in final energy demand. In scenarios 1 and 3 nuclear power or fossil-fuel-fired stations provide base-load electricity, but with the proviso that any CO₂ emitted from such electricity generation is recovered and injected into porous bedrock. Norway currently carries out such a process of CO₂ recovery at its Sleipner natural gas field.

All scenarios entail an aggressive programme for expanding renewable energy sources as well as CHP plants, but scenario 1 is by far the most ambitious, with 53 GW derived from such sources. And all four scenarios assume that fossil fuels will continue

to be used in transportation, albeit considerably more efficiently compared with today.

But it's only scenario 4 which would come near to satisfying the demands of environmentalists. Final energy demand is down by 47 per cent compared with 1998, nor does it require any nuclear power or fossil-fuel-generated electricity, except for some 2 GW used as back-up in case of emergency demands. The total energy supplied from renewable sources is 19.5 GW which is two and a half times less than that required in scenario 1. And for those concerned at agricultural land being used for energy crops rather than for food, the area dedicated to energy crops is less than one-fifth compared with the first two scenarios. Windpower is half that required in scenario 1.

The conclusion is glaringly obvious. If we in the UK are serious about climate change and our responsibilities in reducing our impact to acceptable levels, we will have to reduce substantially our energy demands. Perhaps, we should think twice before jumping into our cars for that journey around the corner? Maybe that walk or cycle ride will do the world good as well as us.

*Peter Bunyard is the co-founder and science editor of **The Ecologist**.*

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BURNING DESIRE

IT'S TIME TO HALT BRITAIN'S WASTE INCINERATION SCANDAL, SAYS CASPAR HENDERSON.

WHEN MICHAEL MEACHER, the UK minister for the environment, launched the government's waste strategy recently, 'statutory recycling targets' and 'waste minimisation initiatives' were the order of the day. But these warm words hid the real intention of the policy – which is actually a charter for waste incineration.

The strategy set a modest national recycling target for the UK, which could be achieved in at least two ways. One would require the creation of something like a 'zero waste agency' to oversee the transformation from a waste management paradigm to a resource maximisation model. This would set Britain on the long road of catching up with leading-edge countries like Germany, the Netherlands and the US. Another option is to fudge it, reclassifying incinerator ash as 'recycled' material, and thus giving the go-ahead for the large-scale burning of our increased levels of waste.

No prizes for guessing which approach the government is most tempted to adopt. The reclassification of incineration as recycling has a number of short-term benefits for short-sighted politicians: for example, it allows local government authorities to claim that their 'recycling' rate has shot up because they are burning more waste; and classifying incineration as a 'renewable energy source', in defiance of the rest of Europe, helps it wriggle out of more substantial commitments to environmentally benign power sources like wind and solar.

One problem is timescale. Transitional sums for moving towards zero waste are considerable, and come in the first five years or so of a recycling programme. The costs for an incinerator, by contrast, are spread over about 25 years. So the authorities gravitate towards short time horizons which put off real costs until later. 'Often,' says one well-informed source, 'I hear them say "well, if there's any trouble I won't be around to deal with it".'

It doesn't help that we're starting from a lousy position. Britain has some of the lowest recycling rates among 'advanced' industrial nations. A new European Directive means we have to move away from our highly unsustainable practice of landfilling more than four-fifths of our waste – but politicians are not prepared to take in the real implications of such a change. Hence the incinerator fudge.

UNLESS ACTION IS taken soon, the UK government's new fondness for incinerator building to solve the country's burgeoning waste problem will lock the country into a technology which destroys jobs, human health and the environment, and which other countries are moving away from as fast as they can.



Then there's the influence of the incinerator lobby, who are clamouring for an increase in waste burning. They say there's no way all the waste can be recycled or designed out, and incineration must be part of a 'balanced solution'. Moreover, says the Energy from Waste Association, or EWA (whose members are almost all power companies), incineration has big 'environmental advantages', including a reduction of the volume of waste by 90 per cent. It's also a job creator, and would represent investment of private sector finance of £1-£2 billion, with 'substantial benefits' for 'the British economy'. In sum, says the EWA, there are no environmental grounds for a general, overriding preference for recycling, let alone unrealistic 'waste reduction' strategies. Only a significant expansion of 'energy from waste' can solve our national problem.

Let's examine those claims in turn. It's

true that incineration reduces the volume of waste, but the residue is highly toxic. After 10 years' detailed assessment of the evidence, the US Environmental Protection Agency announced this May that dioxins from incinerator ash pose a tenfold greater threat to human health than previously thought. But the UK Waste Strategy would allow for the creation of more than a hundred new incinerators producing more than a hundred times as much dioxin. And where is the residue to go? To places like the sleepy Hampshire hamlet of Frith End, where a firm called Grundon proposes a landfill site on farmland. The site is adjacent to the Cradle Lane footpath and a tributary of the River Wey where Alison Melvin takes her six-year-old granddaughter to play PooHsticks. 'The Wey feeds into the Thames when it grows up,' explains Ms Melvin. 'Underground at the site are the Folkestone Beds, a major aquifer which feeds the public drinking water supplied for 35,000 local people.'

It's also been conclusively shown that recycling can save three to five times more energy than can be generated by the most efficient incinerators. And jobs? Treating waste as a resource rather than a disposal problem will create 50,000 additional jobs, largely in local community-based organisations.

What about the claim that there are no environmental grounds for an overriding preference for recycling? Maybe if you ignore the House of Commons Environment Select Committee, which points out that the rich world already uses far too great a share of the world's resources and is going to have to become hugely better at husbanding them. And that begins to get to the real heart of the matter – the sheer volume of waste produced by an increasingly globalised consumerist economy. Even with the most efficient recycling strategies, the vast amount of unnecessary waste this system produces is a problem that is going to have to be tackled one day soon. But with politicians too nervous even to address recycling seriously, that day looks some way off.

In the meantime, many are calling for a moratorium on new incinerators for at least five years while alternatives are worked out. Such a move can't come soon enough.

Caspar Henderson is a freelance writer focusing on environmental issues.



ALL PICS: HUGH WARWICK

GUILTY AS CHARGED

HUGH WARWICK REPORTS FROM INDIA ON A UNIQUE 'CITIZENS' JURY' PROJECT, SET UP TO DECIDE THE FATE OF GM CROPS.

SUPPORTERS OF biotechnology have long claimed that GM food can be justified by the 'solutions' it will provide for the world's poor – and, crucially, for the 790 million people on earth who go hungry every day. But seldom are the people they claim to be helping consulted about the new technologies. This is why the development charity ActionAid set up what it calls its 'Farmers' Foresight' project in India. Organised by University of East London academic Dr Tom Wakeford during his sabbatical at the National Centre for Biological Sciences in Bangalore, it was built on the experience he gained running a similar project in the UK two years ago.

The aim of the UK jury was simply to ask consumers what they wanted – and the results were very clear – they decisively declared that they didn't want GM crops in any of their food. But the Indian project was rather different – and potentially even more significant for the future of GM. Its aim was to inform Indian farmers about both the benefits and drawbacks of GM crops – then allow them to make up their own mind on whether they wanted to grow them.

THE TRIAL

The farmers consulted for this experimental project ranged across the social spectrum. Some were illiterate, some were landless, some were relatively wealthy. They were all from Karnataka State in southern India, and farmed in the area surrounding the village of

A GROUP OF Indian farmers, forming the country's first-ever 'citizens' jury', have voted after hearing 'evidence' from both pro- and anti-GM representatives, against adopting GM seeds by a margin of more than two to one. It could have repercussions for the future of GM in India.

Bommagondakere (known as BG Kere) in Chitradurga district.

The system operated very much like a real legal trial, with the 14 farmers as the 'jury'. Over the course of three and a half days they listened to evidence presented by both sides, and then questioned the witnesses for both defence and prosecution before retiring to consider their verdict. The witnesses were drawn from both sides of the debate, and included the research director of Monsanto India, a representative from the government's Department of Biotechnology and members of development and environmental groups opposed to genetic engineering.

Also attending the trial were two farmers from the UK: Edward Cross, the only farmer represented on the Advisory Committee for Releases to the Environment (ACRE), and Archie Montgomery, chair of the National Farmers' Union's Biotechnology Working Group. They had been invited as observers, to ensure that the trial was fair.

Though they were not witnesses for the jury, they were able to give an insight into the GE debate from a very different perspective.

THE VERDICT

The arguments from both sides were eloquent and persuasive, and for some time it seemed that the verdict could go either way. But it soon became apparent that the farmers were not going to be fobbed off either with bland assurances or unjustified scare stories. And while most started with very little idea about genetic engineering, within a short period of time they had grasped many of the issues at stake, giving the lie to the idea that 'ignorant' peasant farmers could not possibly understand the wonders of GM technology. 'Even the poorest and most illiterate farmers on the jury showed a sophisticated understanding of the potential risks and benefits of new agricultural technologies,' explained Tom Wakeford.

What was so remarkable about the jury was the way in which they cut through a great deal of the rhetoric that so frequently surrounds the debate. They were open to change – and in many ways were looking for methods to improve their agriculture. But they were sceptical of the promises made by the proponents of the technology. This scepticism was based on the reality of their lives. Many had been seduced by the easy gains promised by the green revolution more than three decades ago – and many had suffered as a result.

Repeatedly, the pro-GM witnesses were asked why traditional knowledge was being abandoned in favour of an imported regime. There was a powerful belief in the power of

THE FATE OF THE CHAKMA

traditional systems providing a solution where green revolution technology had already been proven wanting. Even the Karnataka State Agriculture Minister, Mr Jayachandra, speaking before the jury began, admitted that: 'Without biotechnology we can last another 20 years. Biotechnology is the last resort for us'.

He indicated that the state's and the country's ability to feed itself lay with better governance of existing resources, in particular the management of watersheds.

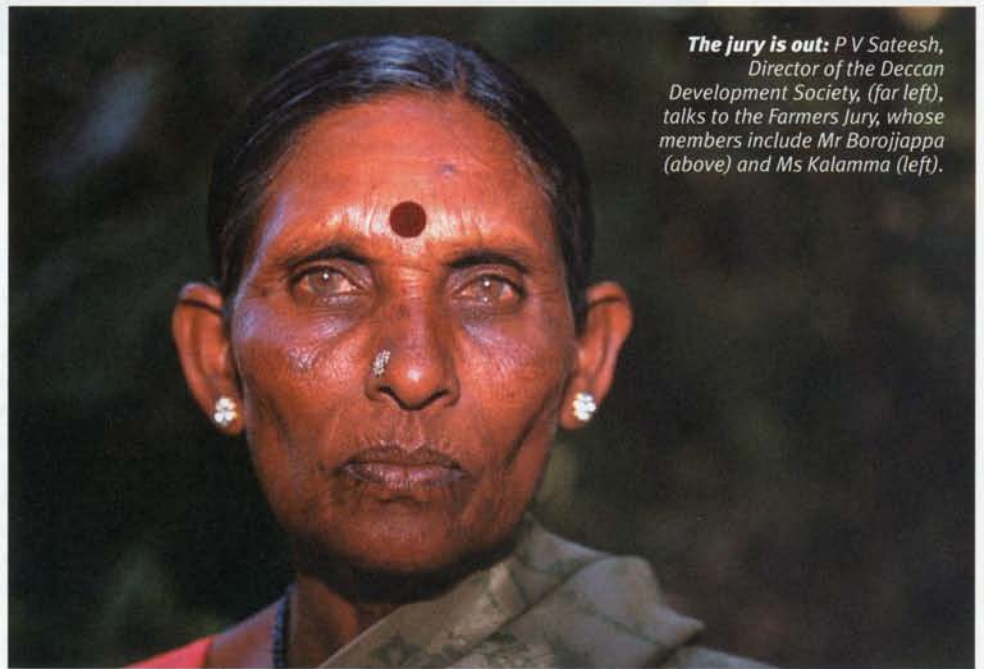
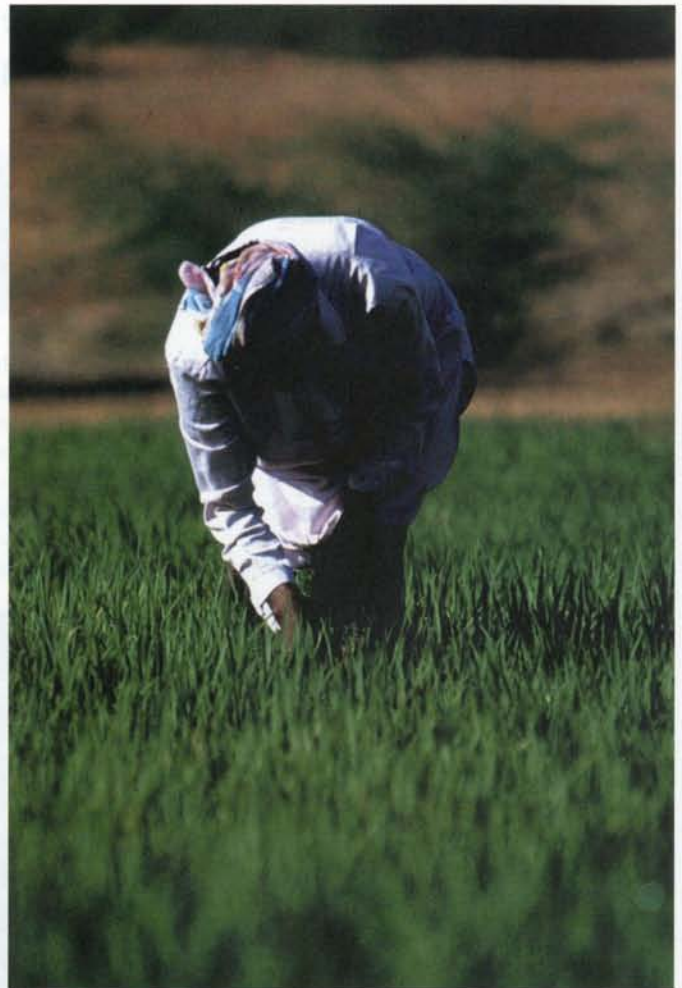
Perhaps the greatest test of faith for the jury was when Dr Munjunath, the research and development director of Monsanto India, told them that genetically engineered seeds were being developed with the small farmer in mind. 'Transgenic technology is coming to the rescue,' he said. There were also some interesting admissions by Dr P K Ghosh of the National Government's Department of Biotechnology. First he alarmed the coconut-growing members of the jury by informing them that there were Canadian scientists working on creating a mustard seed that generates coconut oil. And then he indicated that the introduction of GE in India would have been much easier if it had started with food crops – not cotton as is the case now.

But both were eclipsed by P V Sateesh, of the Deccan Development Society, an NGO that works with the most disenfranchised people in India, the 'untouchables'. He drew the link between India's bloody struggle to keep possession of the barren wasteland along the border with Pakistan while at the same time, without debate, handing over the most fertile land in the country to transnational agricultural corporations. 'This is the start of the new colonialism,' he said, powerfully. 'It is an issue of control and national sovereignty. To achieve this, the transnational corporations want to ensure that the people are de-skilled – and that the great body of agricultural knowledge and skill that has been built up over millennia is lost.'

LESSONS

The effect of the jury process on the two farmers from the UK was obvious. Both were impressed with the depth of questioning that took place, and the effectiveness of the process in allowing both sides to be heard. In the end, nine farmers voted against the introduction of GM seeds and only four voted in favour (there was one invalid ballot paper). But the jury project's significance extends beyond Karnataka, and even beyond India. As Edward Cross said of the experiment's potential: 'This could be taken anywhere in the world. People can work through the issues and form conclusions suitable to their own areas'.

And Tom Wakeford was in no doubt as to the jury's importance. 'While Mr Blair and his advisers still maintain that we need to develop this technology to help the poor and hungry,' he said, 'it is an illustration of the arrogance with which they habitually view the world that they have failed to ask the people who really matter. We have started a process that needs to be repeated globally so that the Western political and scientific elite can no longer misrepresent their needs.'



The jury is out: P V Sateesh, Director of the Deccan Development Society, (far left), talks to the Farmers Jury, whose members include Mr Borojappa (above) and Ms Kalamma (left).

Hugh Warwick is a freelance journalist and editor of *Splice*, the magazine of *The Genetics Forum*. Coverage of the *Farmers' Foresight* is available at www.actionaid.org.uk

THE FATE OF THE CHAKMA

JEREMY SEABROOK EXAMINES THE FATE OF THE CHAKMA TRIBAL PEOPLE OF BANGLADESH, WHOSE LAND AND CULTURE ARE BEING DESTROYED BY COLONIAL DEVELOPMENT.

RANGMATI, IN THE Chittagong Hill Tracts in the east of Bangladesh, is a drowned town, submerged by the creation of the Kaptai Lake in 1962, which covered 54,000 acres of land belonging to the indigenous Chakma people. A new city has crept out of the water around the lake, a scattered circular settlement: what were the peaks of hills are now islands and embankments surrounded by water, reached only by leaky country boats.

In the flooded fields and felled jungles may be read the fate of the tribal peoples threatened with the embalming of their customs and traditions in folk-museums. The language has already retreated from the public spaces, spoken now only in the home.

These peaceable hills have been subject to an extraordinary violence, which in turn evoked a violent response. Between 1980 and 1997, almost 10,000 people are known to have died in the low-intensity war which ravaged the already damaged environment and culture of the Chakmas. The cause of conflict was the influx

of Bengali settlers from the plains in the 1970s: this upset the demographic balance, and made the traditional *jhum* (slash and burn) cultivation no longer sustainable. The 5,093 square miles of the Hill Tracts (almost 10 per cent of the land mass of Bangladesh) became highly militarised; 70,000 people crossed the border to India and 60,000 more were internally displaced by massacres, burnings and evictions.

In December 1997, the Awami League government signed a Peace Accord with the Shanti Bahini, the armed force of the tribal people in the Hill Tracts, recognising their right to land, culture, language and religion.

There are 13 tribal groups in the hills, the most numerous being the Chakmas. Of Sino-Tibetan origin, they practice a Buddhist-animist religion. Their *jhum* cultivation created a distinctive culture and way of life, which has been laid waste over the past 150 years, together with the jungle environment which gave it meaning.

INVASION OF THEIR traditional lands by settlers has led Bangladesh's Chakma people into conflict with the authorities and each other, as they struggle to protect their traditional culture.

Dr Kisa, a Chakma and doctor in Rangamati, is a historian of the tribal people. He identifies three major acts of violence against the Chakmas, each inflicted by a form of colonialism. First, the imposition by the British of monetary tribute on a non-cash economy. The Hill Tracts were then known as *Kaposmahal* – the kingdom of cot-

husband. At that time, people's demands were very small. People had no property. Everything they owned – iron, tools, clothing – could be contained in a small bamboo basket, the traditional design of braided grass worn around the forehead, and the woven basket on the back.'

In the hills *jhum* involved paddy, til (sesame seed), and cotton, intercropped with vegetables. The varieties of rice suited to the steep hillsides were not displaced by the green revolution; the strains are so distinctive they can be distinguished by their fragrance as they grow on the slopes. The Buddhist culture is inflected by older beliefs,

including the mediation of Bonobhante, a jungle priest who meditated in the forests, the vestiges of Sufi tradition absorbed by the culture. People still perform puja to streams and rivers, and recognise Gorma, goddess of water, and Debaraj, a sky goddess. Like many traditional cultures, some customs have a symbolic existential beauty: when someone dies, a thread is tied from the body of the deceased to all surviving relatives – sons, daughters,

wife, husband and so on. Only when the priest cuts the thread can the spirit of the dead depart.

The Chakmas and the other tribal groups never established permanent settlements. Everyone knew how to build the temporary shelters which were abandoned as *jhum* cultivation moved on. *Jhum* is a slow, migratory, semi-nomadic culture. Villages were rarely registered with the government. When survey maps are consulted, the living places of the Chakmas are shown as blank spaces. It was into these 'uninhabited' places that settlers came; a process encouraged under military rule from 1975 until 1991, with its crusade to Bengalise or perhaps to Islamise the hill peoples.

Many assumed that the Hill Tracts would go to India after Partition, since the overwhelming majority of the population were non-Muslim; and for a few days the Indian flag flew over Rangamati. In 1972, after liberation, the tribal people asked for autono-



Reaction: Protesters condemn the local government for doing deals with the Chakma

ton. Money was unknown, although there were other forms of exchange – food, animals, pigs, jungle produce. The second blow was the creation of the Kaptai Lake for electricity by the Pakistanis. The third came with the influx of Bengali settlers – encouraged by the military government. This ignited conflict, as the population grew from its more or less stable 300,000 to about 700,000. Now half the people are settlers, mostly occupying the towns and the lower slopes. The tribal people have retreated further into the ruined hills, poor dusty settlements reached by long staircases carved into the bare flanks, replanted with, for the most part, exotic trees – eucalyptus, ipil-ipil, teak.

Dr Kisa was born in 1933. 'In my childhood,' he says, 'I never saw any shop in the marketplace that sold rice. Salt, earthenware and dried fish – these were the only marketed items. Clothing was never bought or sold. All women learned to weave, and until she could do so, no young woman would find a

my, with a separate legislative body, and a retention of the 1900 Regulations against non-tribal settlers. This was refused by Sheikh Mujib, who led the Bangladeshi Independence movement. In the Liberation War, some tribal people had been against the creation of Bangladesh, which earned them the mistrust of Bengalis. A military presence and administration were soon established. The response by the hill people was the formation of the Shanti Bahini (peace force) in 1972. Violent army operations started in 1980 in response to an ambush of 22 soldiers.

The Peace Accord recognises the old demand for autonomy – the land rights of the Adivasis, their right to preservation of culture, language and religious observance. When the Accord was signed, the majority of the hill people laid down their arms, although some dissident groups continued sporadic attacks and kidnappings. Santu Larma is leader of the Chattagram Jana Samata Samhiti, which speaks for the majority of the tribal people. He is increasingly concerned that the most significant points of the

Accord have yet to be implemented. Many Chakmas are restive, doubting the good faith of the Bangladeshi Government, and some speak of re-joining the dissident groups who never believed in the Accord.

The principal point of contention is the difficulty which any Bangladeshi Government would face in dispossessing Bengalis of land they now possess, and returning it to non-Muslims. Although part of the agreement was the rehabilitation of settlers who had usurped tribal land, there is nowhere else for them to go. Although some of the Chakmas have returned to their homes, the Land Commission which was to have been set up to ensure this was equitably carried out, has yet to come into existence. Only a fraction of the 500 or more military and paramilitary camps have closed, and the promised Hill Tracts District and Regional Councils are not operating.

Meanwhile, the people continue to lose their identity. The Chakma songs are influenced by Bengali words and melodies; schools offer instruction only in Bengali.

Shame inhibits many younger people from wearing the traditional ornaments, and the artefacts made of bamboo – fish-traps, bird-traps, storage baskets for fodder, fruit, yams or leaves, flutes and pipes – can no longer be made because the bamboo has gone.

The present Chakma king is now a barrister living in Dhaka. 'There is nowhere left for us to go', says Sukheshwar Chakma, a teacher. 'We have taken refuge in the dense forests of the mind. But that doesn't provide livelihood.'

The people of the Hill Tracts, with their songs and dances perpetuated only by self-conscious cultural groups, are in danger of becoming like many indigenous peoples all over the world – ethnicity without a culture. This forfeit they are free to go and mourn in city slums, with all the consolations the modern world can offer them – alcohol, drugs and despair. Such impoverishment cannot be measured by the instruments of economic performance. It represents a loss, not only to themselves, but also to the world.

Jeremy Seabrook is a writer and journalist.

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CRISIS? WHAT CRISIS?

ACCORDING TO A FOUNDER OF GREENPEACE, THE AMAZON RAINFOREST HAS NEVER BEEN IN BETTER SHAPE. PETER BUNYARD HAS NEVER HEARD SUCH RUBBISH.

HAVE YOU HEARD the good news? Patrick Moore and professor of biogeography at London University's School of Oriental and African Studies, Philip Stott, have recently gone public with a 'report' in which they insist that the forest is in good health. Only 12.5 per cent of the 260 million hectares of forest contained within the 5 million square kilometres of the 'legal' Brazilian Amazon has actually been destroyed, they say. And, furthermore, even that small level of damage has taken 30 years to achieve – so there's plenty left for the fires of the cattle ranchers and the chainsaws of South-Asian logging companies.

Moore has made his name in recent years by turning against the environmental movement which he helped to found. This, it seems, is his latest salvo in his personal crusade to right the wrongs of his past – but it is the most ridiculous yet. In railing against the likes of Sting and today's 'misguided' Greenpeace campaigners (or

anyone, for that matter, who has shown concern for rainforest destruction), Moore and Stott have made the extraordinary claim – the keystone of their argument, in fact – that at least half the forest which has been destroyed is in full regeneration and therefore presumably doing its bit as a carbon sink in the battle against carbon emissions and global warming. Their evidence? They have flown all over the Brazilian Amazon and pored over satellite pictures. Furthermore, countless Brazilian officials have told them categorically that tales of wanton destruction are little more than a publicity wheeze by environmentalists to bring the cash rolling in.

ACCORDING TO *ex-Greenpeace founding member, Patrick Moore, all the stories about the destruction of the Amazon rainforest are 'at best vastly misleading; at worst a gigantic con'. But his facts are plain wrong – the Amazon is still in trouble, and its fate will also affect the planet's climate.*

some years far worse than that, like 1994/95 or 1998 when the figure leapt to nearly 30,000 square kilometres. But those official figures don't take proper account of the growing volume of forest being stripped in the states of Pará and Maranhão for charcoal production in pig iron manufacture. In 1990 exports of charcoal-fired pig iron were 260,000 tons.

Seven years later they had topped one million. More than 30 per cent of Maranhão and 15 per cent of Pará are now deforested. The state of Rondônia has lost more than a fifth of its forest. The overall figure of 12.5 per cent can lull the ignorant into a false sense of security.

The Amazon rainforest, spread over the basin's seven million square kilometre area (the UK is 35 times smaller) is both a product of and generator of climate. But Moore and Stott think otherwise. Only patches of the forest (biological refugia) were left during the drying out of the last ice-age – therefore, they say, consequently we have more rainforest today than the world had 12,000 years ago. So that's alright. Yet this unbelievably facile claim displays an ignorance of the vital, contemporary role that the Amazon plays in stabilising global climate.

As Brazilian physicists and climatologists showed long ago, the forests to the west of the Atlantic receive their watering through a chain of evapotranspiration, with the same Atlantic-derived water precipitating as many as seven times as the air currents move from east to west across the Amazon basin. More than 20 per cent of the rain that falls never



It's just an illusion: according to Moore and Stott, Amazon burning is nothing worth worrying about

Stott, as an academic, should know better, and is certainly out of sync with Brazilians and other South Americans who are deeply

'Moore has made his name in recent years by turning against the environmental movement which he helped to found.'

concerned at the implications of continuing forest destruction. The official figure is that 20,000 square kilometres of Brazil's Amazon rainforest are being destroyed per year, with

hits the ground, but is promptly evaporated from the canopy. That is a function of the dense, natural forest. As much as 48 per cent is transpired – again a function of the forest. The Amazon river carries back to the ocean less than half of all the rain that falls. The remainder fuels the stream of massive cumulonimbus clouds that finally send their latent energy into the Hadley Circulation and help spread the energy from the sun to the higher latitudes, to the benefit of all of us in northern Europe.

A few numbers tell us what is actually at stake. The Amazon basin receives 12 million million tonnes of water a year. In energy terms, that amounts to 950 terawatts of latent heat, which is 73 times more energy than that deployed by all humanity across the globe. Just a 20 per cent decline in precipitation and consequently in evapotranspiration will amount to a drastic drop in the energy transported to the higher latitudes, equivalent to at least 15 times the world's use in energy.

We have no idea of the area of Amazon rainforest that must remain intact for the chain of precipitation/evapotranspiration to be sustained. Who knows what the limits are? But even if it were true, there would be nothing reassuring in the claim that 'only 12.5 per cent has gone'. Meanwhile, the prediction from the UK Met Office that global warming could put paid to the Amazon rainforest within 50 years, quite apart from the current destruction, is deeply alarming. If the Gulf Stream falters because of global warming and the Amazon rainforest has gone, then we can surely expect a serious chill up in this region of the world.

But then, if Stott and Moore are right, what has the Amazon got to do with us in Britain? According to them it's not something we should be worrying our silly little heads about.

Peter Bunyard is the science editor of The Ecologist.

MURDER AT THE MINES

Carajas in the eastern Amazon of Brazil is home to the world's largest open-cast iron mine. In return for supplying five European countries with half their iron-ore needs, the European Union pledged £400 million in loans for the construction of a 550-mile railway link from the mine to the coast.

The World Bank also contributed and made it a condition that 120,000 hectares of forest should be staked out for the Awa tribe who had been displaced by the project.

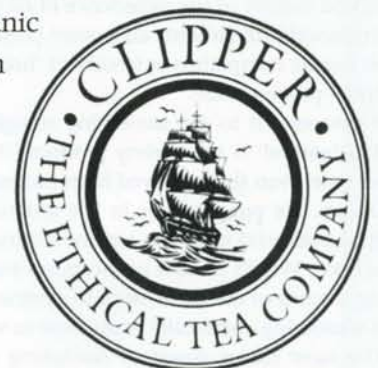
Vain promise! In the 10 years since the mine opened, loggers, ranchers and mineral prospectors have waded in, destroying 400,000 hectares of forest a year and dispossessing the Awa of their land. According to Survival International, the Awa have been shot, poisoned and tortured and are now in danger of extinction.



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Doctor's Handwriting

A monthly column that helps you decipher the medical truth.

The most seductive marketing term at the moment is the word 'natural'. Big supermarket chains and even industrial giants like Monsanto realise that the easiest way to guarantee a constantly ringing cash register is to label a product 'natural', 'organic' or 'vegetarian'. Discerning folk who ordinarily might not touch a drug with a bargepole will willingly swallow it if it is packaged as a wholly natural and organic supplement – particularly if they are told that it is something their body is missing.

Consider the extraordinary marketing of so-called 'natural' progesterone. Several years ago, an extremely pleasant and enthusiastic Californian doctor named John Lee flew over to the UK to present his theories about the role of 'natural' progesterone in preventing menopausal symptoms. Many dozens of alternative practitioners came to hear Lee declare that women entering the menopause were not suffering from oestrogen deficiency but 'oestrogen dominance' due to the presence of huge numbers of oestrogen mimics (pesticides, hormones used in farming, industrial waste) in the environment. The problem during menopause isn't too little oestrogen, said Lee, but too little progesterone.

His prescription for women entering the menopause (or women suffering from a variety of female complaints) is to use a rub-on cream containing a certain percentage of 'natural' progesterone.

The reason for using a rub-on cream is to circumvent the body's response to outside hormones as toxic substances. When hormones like progesterone are taken by mouth, the liver quickly breaks it down, rendering it mostly ineffective. Rubbing on or injecting progesterone enables it to bypass the liver and reach the bloodstream directly.

The effect of Lee's talk (and his books on the subject) and the marketing campaigns of a number of vitamin companies selling progesterone creams has been galvanic. Although Lee's evidence consisted mainly of the experience of 62 of his own patients, many practitioners and patients alike were persuaded that the solution to most female complaints is to correct 'hormone imbalance' through 'natural' progesterone.

It's important to get something straight. The only progesterone that is 'natural' is the variety produced by the female body. Every other type, even those derived from natural sources like soybeans or wild yam, are put together in the test tube. When you use cream derived from wild yam, you are not putting a 'natural' substance into your body. What's present in the cream has been adulterated, undergoing a series of chemical steps to synthesise a substance from yam into something chemically equivalent to what your body makes.

The most clever aspect of marketing natural progesterone as a cream is that it neatly circumvents the stringent laws for drug safety. It is possible to get the rub-on cream in the US by mail order



BITTER PILLS TO SWALLOW

BY LYNNE McTAGGART

because it is considered a cosmetic. It is available in the UK only by prescription, but the creams have not undergone the full breadth of drug safety evaluation.

There are also no standards for the amount of progesterone contained in the creams. In one survey of 27 brands of rub-on progesterone creams, 11 contained more than 40mg progesterone per ounce of cream, five contained between two and 15mg per oz and 11 had 2mg or less per oz.¹

The issue of how much progesterone is contained in the cream is pertinent when you consider the minute doses required by the body to keep things ticking over.

During the menstrual cycle of the ordinary woman, progesterone blood levels range from 0.5 to 20 nanograms per ml, according to Harrison's *Principles of Internal Medicine*. This amount is the equivalent of one part per billion in weight. With the rub-on cream, women could be enhancing the progesterone concentration in the blood by four or five times.

In one study of rub-on progesterone applied to breast tissue, both progesterone and oestrogen levels increased by four times, and yet any blood levels of progesterone were short-lived.² According to this same article, the average amount absorbed is about 10 per cent of the applied dose, so that if you are using 50mg of progesterone, you'd absorb about 5mg.

If this massive increase is happening locally, whether by shot, pessary or cream, we have no idea what on earth it's doing, although high concentrations of progesterone in breast tissue has been linked with a higher risk of breast disease.³

The cornerstone of Lee's hypothesis (and that is, after all, all it is thus far) is that rub-on progesterone can prevent osteoporosis.⁴ However at least two studies of rub-on creams have shown that the rub-on creams do not slow bone loss.⁵

'Natural' progesterone is a drug with unknown dangers – hormone replacement dressed up as a natural supplement. In our zeal to undergo a natural menopause, it's important that we don't fall prey to the same marketing interests that gave us sex hormones and a whopping increase in breast cancer.

Lynne McTaggart is editor of *What Doctors Don't Tell You*, a monthly newsletter which exposes dangers and unproven practices in medicine. Annual subscriptions cost £34.95. For details: WDDTY, Tower House, Sovereign Park, Market Harborough, Leics LE16 9EF. Tel: 01858 438894.

References on page 65.





REVIEWS

BUSINESS AS UNUSUAL

By Anita Roddick
THORNSONS 2000
£17.99



Anita Roddick has always been a fascinating character: businesswoman, environmentalist, campaigner, entrepreneur. Controversial, too, on all sides. The conventional business establishment has always distrusted this unconventional woman, with her emphasis on ethics and her determination to combine commerce with politics. And some parts of the environmental movement have been a bit sniffy about her too, fuelled by that distrust that many greens have for all things commercial.

Now she has written a book – part autobiography part manifesto – which addresses these issues head-on. It's a fascinating, very readable account of her career, her beliefs, her mistakes, her successes – and her belief in how the future should be.

Roddick, the daughter of Italian immigrants, founded The Body Shop with her husband Gordon in 1976. She had no business experience and, at that time, no particular company philosophy – she only painted the walls of her first shop green to cover up the mould growing on them, and she got into recycling bottles because she couldn't afford to keep buying new ones. Over the next 25 years, that shop grew into one of the world's best-known retailers, and one of the few to wear its ethical heart on its sleeve.

This is because Roddick herself believes, as she says over and over again in this book, that business should be about more than making money; it should be about changing things for the better. Sometimes, this worthy aim tips over the edge into schmaltz; she's very keen on getting 'spiritual people' into

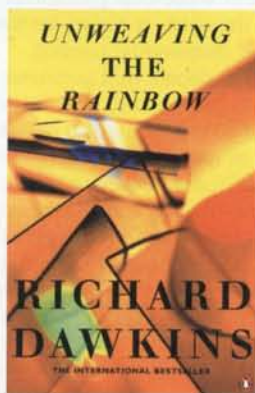
the top echelons of companies, and there's a cringeworthy quote from someone called Jim Channon about how business people should adopt 'the mantle of spiritual elder for their cultures'. But none of this really matters, for it's Roddick's genuine enthusiasm for new ways of doing things that leads to such occasional earnestness; and we could certainly do with a bit more of her brand of human-scale ethical commitment in the arid world of profit-driven commerce.

And this book (which is well-designed and scatter-bombed with examples of the entertaining and often cheeky adverts that have come to define The Body Shop's approach) is like Roddick herself; fiery, unconventional, occasionally bizarre, slightly chaotic but ultimately a good thing to have around. It swerves from extracts from Roddick's 'Seattle diary' of 1999 to pages of business philosophising; from personal accounts of her childhood to honest dissections of the dangers and downsides of the 'beauty industry'; through tales of her battles with the faceless suits of today's Body Shop, as they struggled to end the company's campaigns against the Gulf War and for the rights of Amazon Indians, and make it 'just another company'. It's a good read, from one of today's most intriguing business figures – a woman who believes, as she writes here, that 'a life without fighting for anything has a hint of death about it'.

Peter Kane

UNWEAVING THE RAINBOW

By Richard Dawkins
PENGUIN
£8.99



Richard Dawkins has had praise heaped upon him for the clarity and descriptive quality of his writings. Like the painter who

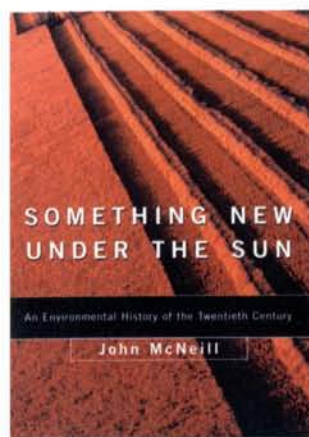
deftly transports us into his make-believe vision, Dawkins has used the power of words to sway the uninitiated into the ticker-tape world of the genetic code, which clothes itself with the attributes of the living cell in order to reproduce itself at the expense of all others. According to neo-Darwinist Dawkins, the innate aspiration of the 'selfish gene' to leave more of itself behind is the driving force behind evolution. The potential new species strides ahead up the fitness curve, leaving its more poorly-adapted predecessors languishing behind, to the point when they are driven to extinction. That is the world as Dawkins sees it.

Dawkins' complaint in this book is that studious anti-science ignorance as well as a wishy-washy desire to believe in superstition and magic have not only become fashionable, but that these attitudes bereave us of the beauty and poetry that lie in the scientific unravelling of the secrets and mysteries of the cosmos. But perhaps, he should look to his own vision and interpretation of the cosmos, which, far from captivating and inspiring, leaves many feeling bereft and void.

His title, *Unweaving the Rainbow*, is taken from Keats's celebrated poem in which he claimed that Newton and his ilk destroyed for ever the poetry of the glistening hues of the rainbow. 'In the dull catalogue of common things, Philosophy will clip an Angel's wings... Unweave a rainbow', says the poet. But that is just where Keats and the anti-science sceptics of today are wrong, says Dawkins. In quoting from the genius physicist, Richard Feynman, 'The beauty that is there for you is also available for me, too. But I can see a deeper beauty that isn't so readily available to others.' Dawkins makes the point that scientific discovery contains its own powerful poetry, which provides a far more satisfactory explanation than the misguided, or even fraudulent explanation that we swallow in the purposefully deceiving manipulations of the magician and conjuror.

I agree with Dawkins that a fulsome explanation of phenomena, however difficult to comprehend, confers satisfaction, without necessarily detracting from natural beauty. Rainbows, despite knowing about raindrops, wavelengths and refraction, are still beautiful to behold. Yet, despite all we know concerning the physiology and psychology of sight, we remain blindly ignorant of the essence of vision – the actual seeing.

Equally, the mystery of life remains – perhaps it will always elude us, being the



SOMETHING NEW UNDER THE SUN: AN ENVIRONMENTAL HISTORY OF THE 20th CENTURY

By John McNeill

PENGUIN 2000/£20.00

Douglas Adams, in his *Hitch-Hiker's Guide to the Galaxy*, claims that the most dastardly instrument of punishment ever

invented is the Total Perspective Vortex. This heinous virtual reality machine exploits the fundamental inadequacies of the human brain by delivering a precise mental image of one's entirely negligible importance in the universal scheme of things, whereupon the chosen victim invariably descends into mind-blown madness. The moral? Our brains have been wired by evolution to deal with the universe at minuscule spatial and temporal scales, so the very last thing that a human can afford to have is a sense of perspective.

As the human race enters the 21st century, however, a quick communal session in the Total Perspective Vortex would not, perhaps, be a bad thing. The acquisition of a global sense of perspective seems to offer our last best chance of managing the Earth sustainably. To achieve this, it is necessary to appreciate the long and slow history of our planet, the timescales over which it has managed to accommodate change in the past, the historical impacts on the biosphere of environmental upheavals of various sorts, and the extent to which human-induced environmental changes might currently be approaching or exceeding the Earth's ability to cope. Only against such an historical backdrop can we judge our present actions and predict their likely outcomes in the future. It is with this philosophy in mind that John McNeill presents us with his timely new book *Something New Under The Sun*.

Its aim is to catalogue humanity's 20th century activities and interpret their environmental impacts within the broader contexts of human and Earth history. Some of the facts and figures he presents to this end are quite remarkable. For example, we have probably used an order of magnitude more energy in the last one hundred years than our ancestors used in the previous thousand (an admittedly crude, back-of-an-envelope calculation, but probably not far off). In the 20th century, we have also transported more rock and soil around the world than wind, glaciers, mountain-building processes or volcanoes have. Only water remains a more significant erosive agent, but with continued growth of the global human population and the materials-based infrastructure that inevitably goes with it, we will probably occupy the top-spot quite soon. So numer-

ous and powerful have we become in the last century that we now collectively qualify as a geological process.

Similarly powerful statistics are presented as McNeill assesses in turn the extent of humanity's recent influence on the atmosphere, hydrosphere, and ultimately the biosphere. Our flourishing skill as an agent of extinction is widely appreciated these days, but some of the figures are worrying enough to deserve repetition. The rate at which mammal species went extinct in the last century, for example, was about 40 times higher than 'normal' (a background rate calculated over aeons), while the corresponding figure for our feathered friends is nearer a thousand. Some ecologists predict a loss of between 30 and 50 per cent of the world's terrestrial species in the next century or two. On the basis of these and other estimates, McNeill suggests that we may be pushing the biosphere ever nearer to a global mass extinction event. Other commentators suspect that we may already be in the midst of one. Can the life-support network upon which we rely cope with escalating exploitation of the world's resources and the enormous losses of biodiversity that look set to ensue? Our ignorance of the workings of the Earth and biosphere is such that no one has the faintest idea. Our current experiment in planetary change is simply unprecedented.

In Part II of *Something New Under The Sun*, McNeill embarks on an assessment of the demographic, economic, political and social forces that led to the environmental impacts detailed in Part I. Here he is as diligent as ever, relating with detail, clarity and insight the underlying reasons for 20th century population growth, migration, urbanisation, industrialisation, our ever-increasing exploitation of the world's natural resources, and the staggering growth in economic activity that has led to our current somewhat precarious environmental situation. It makes for fascinating, if rather disquieting, reading.

In a field of debate that generates great passion in its protagonists, often accompanied by selective presentation of data and promotion of ideologically-derived opinions, *Something New Under The Sun* is long overdue and, frankly, a breath of fresh air. It is also an important and timely work of interdisciplinary scholarship, written to be accessible to anyone interested in the relationship between our species and the planet that supports us.

As such it deserves to earn the praise both of the public, and all those who work in the multifarious fields of environmental science.

Chris Lavers

Emergent property of a coherence of structure and form that we can never hope to emulate. Indeed, there is next to nothing of poetry in the technological manipulations that led to Dolly, the cloned sheep, and I suspect that it is precisely that sort of science that Keats would have hated and despised. Whether Dawkins likes it or not, there is still a place for the poet who sees scientific explanation as inadequate and an obfuscation of an ultimate mystery that recedes beyond time and the 'big bang'. But then, Dawkins is dismissive of religions and worship. They have no scientific backing.

Ironically, where you might have thought Dawkins would have found poetry in a scientific idea, he is disdainful and dismissive. Somehow, Jim Lovelock's Gaia thesis, instead of inspiring Dawkins with its stimulating logic, sticks in his throat to the point where he resorts to patent dishonesty to put it down. He states that Lovelock 'proposed... that bacteria produce methane gas because of the valuable role it plays in regulating the chemistry of the earth's atmosphere... The problem with this,' Dawkins enunciates, 'is that individual bacteria are asked to be nicer than natural selection can explain.'

What a banal falsification of the tenets that underlie Gaia. The essence of Gaia is that neither one nor the other is behaving for the good of the planet. Rather, they do what they do because the total system of which they are part won't let them do otherwise. Lovelock's is not a fuddy-duddy concept, but a proposition that our planet is as we find it because of an underlying geophysiology. Whereas a neo-Darwinist would see life as adapting to external conditions in the struggle for survival, the Gaian scientist sees external conditions being modified by life to suit life. And there's nothing mysterious in that: it is none other than an emergent property of the web of life itself. Moreover it can be mathematically circumscribed.

In many ways, Dawkins has become a victim of his own metaphors, having to uphold an idea of the selfish gene that resonates badly against what we know of life on Earth. How does such a selfish concept square against our discovery of the complex community structure of a microbial mat, such as those which grace the shoreline of Shark's Bay in Australia, and even more surprisingly appear to make up the fossilised structures found in three-billion-year old stromatolite rocks? All of which appear to have comprised an evolving whole. And how can such a concept explain the discovery that trees in forests are linked together

through a subterranean mat of root fungi, so that the nutrition and survival of one helps that of another?

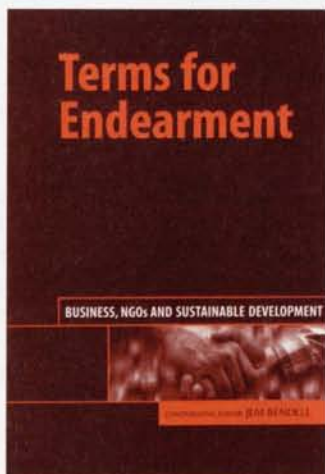
But for all its reductionism, *Unweaving the Rainbow*, makes a good read. Dawkins does have the power to enthrall us and open our minds to ways of seeing, as well, if you are alert, to take issue. There is some beauty in that, though not poetry. Why do words move us, or music, or the bounding of a cheetah, or the form of an orchid? Surely not because we glory in syntax, or pythagorean harmonies, or the sliding movement of actin and myosin, or because the orchid is fooling a bee?

Again it takes a great scientist to point out the obvious. 'When romantic love transports me,' says Lovelock, 'I get no comfort from the knowledge that my passion is consequent upon the circulation in my blood of a simple steroid, testosterone... The pleasures of science are in the mind, but poetry and music move our hearts as well.' Isn't that what Keats was getting at?

Peter Bunyard

TERMS FOR ENDEARMENT BUSINESS, NGOS AND SUSTAINABLE DEVELOPMENT

Contributing Editor: Jem Bendell
GREENLEAF PUBLISHING LTD IN
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Businesses and NGOs concerned about social and environmental justice are seen by many to be locked in a perpetual war of values and ideologies. As the recent debate

between George Monbiot and Jonathon Porritt in this magazine shows, the argument between 'fundamentalists', who are sceptical of any common ground, and 'realists', who actively seek it, has lost little of its heat in recent years.

Few would deny that corporations, especially the biggest ones, are enormously powerful. But can profit-maximising entities with limited liability ever be a force for good if the right systems of regulation and accountability are in place? And can civil society – in the form of NGOs and their allies – help bring such systems into being? Or will they inevitably be captured, just as government often is, by vested commercial interests?

Terms for Endearment aims to help lay the groundwork for NGOs to smooch more safely and productively with the big business beast, so that it can mend its ways. Today's battles, argues the editor, are often fought within companies themselves, as

'The book aims to help lay the groundwork for NGOs to smooch more safely and productively with the big business beast, so it can mend its ways. Today's battles are often fought within companies themselves, as those who understand the importance of strategic environmental issues struggle with those who are not convinced.'

On TERMS FOR ENDEARMENT

those who understand the strategic importance of environmental issues and 'stakeholder' relations struggle with those who are not convinced.

If you are an NGO campaigner or sympathiser, then, even if you don't agree with this premise, there is material here that will help in the preparation of future campaigns by providing insights into how companies operate.

The book is also intended to help those in companies who are looking for a hot date with civil society. For readers coming from that direction there's plenty to chew on too: as numerous case studies in the volume show, not every case of NGO-business interaction can be 'win-win', and the

dangers of trying to 'manage stakeholder pressure to corporate advantage' are very clearly spelt out.

Either way, *Terms for Endearment* is useful for the essential task of achieving a better understanding of where power lies and what drives NGOs, businesses and the political process. At the same time, such analysis cannot be the whole story: the Gramscian division of society into three overlapping sectors of government, the market and civil society can only be a simplification of limited scope.

Relations between business and NGOs range from the strongly antagonistic to the collaborative, but, according to a prediction by David Korten ten years ago, a 'fourth generation' of NGOs is emerging, which aims to build 'a critical mass of independent, decentralised initiative in support of a social vision'. Part of this strategy is building links between different NGOs and addressing the more structural issues at the heart of social and environmental problems. Whereas third generation NGOs 'seek changes in specific policies and institutions', the fourth generation are bringing together loosely defined networks of people and organisations across national borders in North and South to transform the institutions of global society. The pressure to do so results from the lopsided nature of globalisation: trade, finance and business have whizzed ahead while governance and accountability have fallen way behind.

NGOs have considerable resources for the task ahead. Worldwide, their turnover is thought to be at least \$1.1trillion. By some estimates, they provide more aid than the World Bank and employ more than 19 million people. New information and communication technology also provide many NGOs with greater knowledge, voice and power. Although the vast majority of the world's poor and powerless do not have access to information technology, growing numbers of NGOs do. The flow of information around the world during political uprisings and following disappearances or murders of notable campaigners lends added political weight to such events. Thanks to cyberspace, absolute control over information access is no longer possible – although you have to be plucky to flout the controls in places like Liberia, China and Burma.

As for the big corporations, some of their most expensive consultants tell them they will need to work hard to maintain a social 'licence to operate'. A 1997 report by

London-based Control Risks Group describes 'the pressure on companies, wherever they operate, to adopt the highest international environmental, labour and ethical standards'. According to this report, 'heightened international scrutiny, means that perceived transgressors truly have 'no hiding place'.

The 18 chapters cover a huge range of industries and regions. One of the most interesting contributions comes from Simon Heap and Penny Fowler, who consider whether there is an emerging model for environmental and social certification overseen by councils comprised of multiple stakeholders. The Marine Stewardship Council (MSC) is the second multi-stakeholder council, being based on the original Forest Stewardship Council (FSC). By comparing the separate processes to establish the FSC and MSC, Heap and Fowler highlight key issues in other sectors such as mining, oil and agriculture. They argue that the FSC was a bottom-up process led by members while the MSC has been a top-down process led by experts, and this difference has meant that the MSC faces more attacks on its legitimacy, especially from Southern NGOs.

The conclusion touches on some of the crucial points in the future direction of relations between business and civil society. The authors argue that as campaigners in various NGOs are beginning to recognise the common threads of their individual efforts to influence corporate behaviour, there is the growth of a powerful new social movement, which they term the 'corporate accountability movement'. The key issues, they argue, relate to areas of corporate transparency, accountability and financing. A major part of the solution, it is suggested, will be global 'civil regulation':

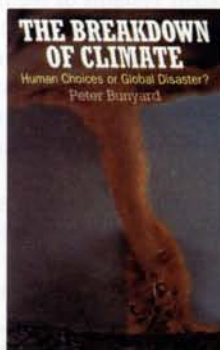
'Global business is just beginning to be regulated by a global civil society, a situation that provides some promise for a just and sustainable global order in the 21st century, while showing significant shortcomings and posing major political challenges. A key challenge is to bring some order to what is a very anarchic process at present, to build the necessary institutions as quickly as possible, and to ensure that democratic principles are upheld.'

That's a neat summary of a Herculean task in which partners for sustainability would be well advised to count their fingers after every handshake, and keep a sharp eye on where the power and money flows.

Caspar Henderson

THE BREAKDOWN OF CLIMATE HUMAN CHOICES OR GLOBAL DISASTER?

By Peter Bunyard
FLORIS BOOKS/1999/£9.99



Early last year *The Ecologist* published a special issue on 'the climate crisis'. It argued that severe man-made climate change could occur much sooner than previously predicted, explored how every aspect of life could be affected and examined why governments had done so little about it. In a declaration signed by hundreds of scientists, activists and others, the magazine called for worldwide emissions of greenhouse gases to be cut by 70 per cent to 80 per cent compared to 1990 levels within 30 years, and for a phase-out of fossil fuels within 50 years.

Somehow, the world didn't listen. Since then, emissions have continued to increase and show every sign of continuing to do so. The public and those in positions of influence need as much literacy in the science of climate change as possible – and fast. Peter Bunyard, a founding editor and currently science editor of *The Ecologist*, offers a quick route to just that.

The Breakdown of Climate gives a clear overall picture of climate from its origins to the present day, comparing the cause and effect of natural changes with human influences. It explains how weather systems function, and how oceanic currents and tropical forests are vital in maintaining these processes. It is a solid introduction to the science of climate change. Almost anyone seeking a guide to climate science, in plain language that is clear and well-structured but does not shy away from complexities, will find what they need in this book. Even if you think you know quite a bit already, here is almost everything you ever

wanted to know but were too afraid to ask.

There is probably no other general guide available that is as up-to-date in its account of the state of understanding of the interactions of the climate and the biosphere. Despite its brevity, the book goes down some interesting byways – reminding the reader, for example, of the sheer destructive potential resulting from natural climatic variation. Sea floods in Northwest Europe in the 13th and 14th centuries, for example, took a terrible toll, with more than 300,000 people drowning in one that struck the Dutch and German coasts. In two such floods, in 1240 and 1362, sixty parishes in the province of Schleswig in Denmark were swallowed by the sea.

The author does not devote the same attention to political issues that he does to scientific ones. Only one chapter – a whistle-stop tour starting with the foundation of the Intergovernmental Panel on Climate Change in 1988 – is allocated to the politics of climate change, while essential elements of a solution are glossed over. An important question, which is not tackled here, is whether climate solutions can be delivered without the profit motive and the involvement of industry. It seems unlikely. Of course, incentives for change will not be enough either. It's also necessary to punish transgressors, but this too is possible.

In November, the parties to the Framework Convention on Climate Change meet for the sixth time. The meeting could be momentous, as national and corporate interests threaten to bring to a halt even the sub-snail's rate progress that has been agreed so far under the Kyoto Protocol. There will be battles at the Hague over the very future of Kyoto, but even a debacle could mark the end of the beginning, setting the stage for the sort of co-ordinated and sustained international action on climate that Bunyard's book so clearly points to the need for.

For this to be so, popular pressure is essential. Campaigns like WWF's 'climate voice' are a start, but even the target 10 million signatures they hope to gather is pretty pathetic when one considers the scale of this issue. By comparison, a Chartist petition presented to Parliament in 1842 (with six fundamental demands including universal male suffrage, secret ballots, and an end to rotten boroughs) had 3,317,702 signatures and was more than six miles long. In proportion to the population of Britain today that would be about 10 million signatures. Can the whole world do better? The case that Peter Bunyard lays out makes it clear that we must – and soon.

Caspar Henderson

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Page 24 *Your money and your life?*

* Although all cancers might be described as genetic, inasmuch as they are the consequence of altered DNA, opinion varies as to the levels of genetic predisposition to a variety of cancers. Olah, (1) suggests only 1 per cent of cases have a hereditary genetic component (which even then he suggests usually have to be triggered by environment or lifestyle co-factors) while Lindblom and Nordenskjold (2) put the figure at around 5 per cent.

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If early press reports are to be believed, this scientific breakthrough will soon enable us to determine who is predisposed to what disease, and thus allow us to make a pre-emptive strike by way of adjustments in the person's DNA. While the prospect of finding such an omnibus 'prophylactic tactic' is reason to rejoice, we must proceed with caution. For, as Aldous Huxley warned in *Brave New World*, the temptation to abuse such knowledge can be irresistible to a ruthless regime bent on reducing the individual to a compliant cipher.

Huxley wanted to alert his own generation to the fallacies and dangers inherent in a political system in which science was made subservient to the will of the State — as was the case in Communist Russia, and was soon to manifest itself in Nazi Germany. Wherever soulless science joined politics in an unholy union to produce a master race, it instead gave birth to chaos and untold human misery.

Almost 70 years have now passed since Huxley issued his prophetic warning against the misuse of scientific knowledge. He saw science as a potentially dehumanising force — one that could rob us of the very essence of humanity: our creativity and ability to reason, our potential for unselfish love and divinely inspired deeds. And this from an avowed agnostic!

The rising star on the scientific firmament, as reported earlier in this issue, is nanotechnology — certainly the art of the infinitesimal, but not exactly what economist E F Schumacher had in mind when he wrote *Small is Beautiful* some 30 years ago.

Nanotechnology (from nanometre, one billionth of a metre) enables us to manufacture molecular-size 'bombs', with the promise of eradicating many of the viral and bacterial scourges that have plagued mankind from the beginning of time — everything from herpes and flu to E. coli and salmonella. Such non-bombs have already been successfully tested against spores

containing anthrax — the deadly biological warfare agent used by Saddam Hussein in the Gulf War and against the Kurdish minority of his own country.

'We are knocking on the door of creating new living things, new hybrids of robotics and biology,' says Paul Alivisatos, a chemistry Professor at the University of California (as quoted in *US News & World Report*). 'Some may be pretty scary, but we are compelled to keep going. It is just so cool.'

So much for scientific compulsion and cool. Fortunately Paul's colleagues in the halls of academe are not all as gung-ho about the new technology as he. Some scientists express alarm at the rapid evolution of their latest pet lab rat. Along comes our friend Bill Joy, who wrote in *Wired*, and reiterated to *The Ecologist*, that 'in the wrong hands, nanotech could be more destructive than a nuclear bomb'. He envisions a scary scenario straight out of H G Wells or *Star Wars*, in which trillions of self-reproducing nanobots would take on a life of their own and

'Nanotechnology was probably not exactly what Schumacher had in mind'

reduce our planet to a massive lump of 'grey goo'. Importantly, Joy does not foresee any technical solution to this dilemma; he believes it has to be an ethical and political decision.

Aah — and there's the rub. For, as Santayana observed, 'those who refuse to learn from history are condemned to repeat its mistakes'. And human history is rife with examples of our reluctance to learn from the mistakes of previous generations. But to a would-be Stalin or Hitler, Idi Amin or Saddam Hussein, Pol Pot or Kim Il Sung, the temptation to use such sophisticated technology as genome-tinkering and nano-bombs toward nefarious ends might well prove irresistible. And if you think tyrants are obsolete, you are welcome to join TBTF — True Believers in the Tooth Fairy.

But all is not gloom on the political and scientific frontiers of our brave new world. Far from it. In the same issue of *Wired* that featured the joyless prophecy of Mr Joy, the magazine's editor, Mortimer B Zuckerman, assures his readers in a full-page editorial that globalisation is the panacea for all of mankind's problems, present and future: 'it's the way to even greater gains in prosperity'. He roundly castigates 'anti-globalists [who] out of ignorance and indifference... are seriously distorting reality'.

So it would behoove us 'poorly informed' environmentalists and 'street protesters' to post-haste mend our errant ways. We should know better by now, anyway: if there's a problem, you can bet that global free trade will be the answer. So relax. The good guys have it all under control. Just like they always did.

The Crow is a mouthpiece for thinkers with individual and strong views. This month, the role of The Crow was taken by Gard Binney.



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finance companies that needlessly pollute,
the less pollution there'll be.

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