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September 2008

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'It's been nice knowing you'



CARRY ON THE WAY WE'RE GOING, AND WE'LL BE BIDDING FAREWELL TO 48 PER CENT OF OUR EVOLUTIONARY COUSINS.

That's what a mammoth scientific survey from the International Union for the Conservation of Nature concluded this summer, as it drew up a list of all primate species classified as either 'vulnerable', 'endangered' or 'critically endangered'. Tropical deforestation is still the biggest cause, although scientists now worry that the rising trade in bushmeat means some primates are literally being 'eaten to extinction'.

Editorial

The beauty of barter

Years ago, when Jonathon Porrit said that capitalism was 'the only game in town' it was not a ringing endorsement of the free market but rather a pragmatic, grudging acknowledgement of the reality of a world ruled by the current capitalist structure. His hope was that environmentalists would recognise this, factor it into their campaigns and thought processes, and by doing so broaden the pool of ideas upon which they could draw to envisage solutions.

Instead of creative problem-solving, however, what has happened in the interim is that 'green marketing' – where companies try to convince the public they are environmentally sound without making too many systemic changes to their business – has sprung up. In the meantime, the multinationals have continued to preach the gospel of globalisation and the free market.

But the free market is under pressure from the converging crises of climate change and resource depletion. So it's not surprising that Porrit – in an impassioned and brilliant op ed in the *Guardian* recently – noted that the idea that we can reduce CO₂ emissions and overcome resource shortages by carrying on along the same economic lines, with a few green bells and whistles thrown in, was 'a fatuous fiction'.

He's right, of course. Here and there we are seeing small acknowledgments of this fact. Earlier this year, the Malaysian Minister for Plantation Industries and Commodities let it be known that his country would swap palm oil for rice with any rice-producing country willing to make the trade. Palm oil prices had not surged as they were supposed to; his people needed to eat. The logic was devastatingly simple: trade whatever you have for whatever it is that you most need.

As a warning shot about the breakdown and fragility of the globalised commodities market it could not have been more poignant. Commodities traders the world over must have had a fit, before heading off to a local bar to numb the pain with a cold mojito or five.

The Malaysian example is nothing short of anarchic to those who want to maintain an orderly market, where goods are subject to official global pricing structures. But from a human welfare point of view the 'free' market, which has never been trustworthy, nor had our best interests at heart, can no longer claim to be what it once prized above all else – **efficient. When the market fails it is local solutions, such as good old-fashioned bartering, that may just have to keep us afloat.**

That and local knowledge. This is why the Giri Raja chicken story (and accompanying *Ecologist* film) on page 22 of this edition is so heartening. This sturdy, high-yielding fowl, bred and distributed to directly benefit the poor, rather than increase the wealth of the rich, is causing a food revolution in southern India. Rural villagers buy and sell eggs, hatch birds, provide high-quality protein for themselves and their families independent of the food multinationals. And the big guys are furious.

The Malaysian government and the villagers of southern India are doing what we are all doing: looking for alternative ways to get what we need. They are not exactly trading their goods on Freecycle, but in global terms they might as well be. Bypassing the official market for simpler systems of barter and local trade underscores the notion that the current system doesn't work.

Perhaps it's time for those who say that challenging the dominant model of 'progress' will drive us all back to the caves to consider the reason for the collapse of the recent Doha trade round. The converging crises we face make it clear that the economic and trade patterns we are used to will break down as nation after nation shuts its doors to global traders and begins to protect – maybe even revitalise – its domestic supply chains for food, goods and services. And when we hit the wall it's not the latest iPhone we'll be bartering for but the next meal.

It's time to face facts. Globalisation is just soooo last century.

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WHEREFORE ECOTOWNS?

We welcome Dr Strong's article on 'Whole House Thinking' (June) and agree that there is little point in the development of low-carbon housing if it results in creating buildings that are 'uneconomic to maintain, are built on flood plains, overheat in summer, have poor acoustic performance, poor indoor air quality or other unintended consequences'.

However, without an extreme programme of change, little is likely to be done to address existing building stock. Even the UK Government's ambitious target of making all new residential buildings carbon-neutral by 2016, and new commercial buildings carbon-neutral a few years later, fails to address the question of what to do with the vast majority of existing buildings.

This underscores the need for behavioural change in occupants and users. Managing the move to a lower-carbon society is a unique opportunity to rethink our relationship with our environment, especially the indoor temperature of our buildings.

Current approaches to climate change adaptation fail to address existing buildings or provide sufficient incentives. Even adopting more efficient methods of heating and cooling buildings to current 'standards' of comfort is unlikely to deliver the needed CO₂ reductions. Energy usage in buildings is recognised as one of the biggest contributors to climate change. Buildings represent a global average of 33 per cent of the total of energy-related emissions, with buildings in Europe using 41 per cent of total energy in Europe, and 36 per cent in the US. The most significant proportion of energy in buildings is consumed through heating and air-conditioning to maintain what we now think of as 'comfort'.

The notion of what we find comfortable is based on a rich mixture of cultural, social, psychological, behavioural and contextual drivers. Comfort depends on our expectations, as well as on a variety of conditions involved with our specific activities, the management of a place and the capacity for use to control our own environment. A definition based on appropriate comfort could allow a shift from automation, uniformity and predictability of

indoor temperature towards one that recognises people have some adaptability and resilience.

For architects, this presents a challenge: to design buildings with thermal delight and variation in order to expand the range of temperatures we find acceptable. There is potential for inhabitants to take more control over their personal indoor environment – adjusting the windows, lowering the blinds, controlling the ventilation – and a more thermally varied set of places within a building. Architects will need enhanced skills better to understand and engage with inhabitants for feedback, dialogue, communication and adaptation. This is a breakthrough because it recognises that comfort is not delivered by technology alone

and that design/operation has a significant impact on what we define as an acceptable range of comfort.

For politicians and other leaders, the challenge is to broaden the discussion of what a low-carbon society should be. This needs to embrace the possibility of exploiting the flexibility of peoples' relationship with the weather, both indoor and out. Technology has a role, of course, but past experience indicates that pernicious revenge effects can result from technological innovation – sometimes increasing rather than decreasing energy demand. To realise a low-carbon society we must work with the concept of how to achieve comfort. It doesn't depend on technology or large investment, and is something that we can start today.

Richard Lorch, Editor
Building Research & Information

A CASE OF BAD WIND

Mark Anslow's thought-provoking article in the July/August edition asked readers to consider whether it is possible for flying to be green. If this 'greening' is to happen, there must be major technological breakthroughs that reduce fuel consumption, noise levels and other aircraft emission. Each of these is a key factor influencing any aircraft's environmental performance – but here is the sticking point: engine manufacturers know that it is diabolically hard to improve any one of these factors without producing adverse effects on the other two.

Neither does it look likely that new airport development will be very green. Few in the aviation industry support the idea that these projects should be at the coast. Marine airports would be a whole lot cleaner than old airport sites such as Heathrow. This is because the pollution is dispersed by sea breezes and does not descend so readily upon residential areas.

Lyn Wood, Surrey

LATTER-DAY LEVELLERS

Professor John Beddington must be congratulated for giving land use the priority it deserves, especially as food security and

Ecologist poll

Is it time to rethink, and reform, the UK's educational system?

76

per cent of you said you would give up high-speed travel to save the planet

almost any other social and environmental issue you care to mention has land use at its core. I hope, however, that Professor Beddington and his Foresight team will also recognise that a study of land use would be – as Simon Fairlie suggests (*Comments*, July/August) – impossible without a comparable review of land ownership, population growth and lifestyle.

At present, less than 1 per cent of the population owns around 70 per cent of the land. At a time of concerns over food security and the need for affordable housing this cannot be right, and it is surely time for change. Furthermore, the quality and status of much of the land in question is uncertain and is something the Foresight team cannot ignore. Yet questions over land rights, status and ownership inevitably become political. How will Professor Beddington and the Foresight team of scientists deal with this in an objective and impartial manner?

Questions over land use, ownership and reform have a murky track record. In the 17th century, John Lilburne and the Levellers failed in their attempt to bring about change and were punished for trying. What chance do John Beddington and his Foresight team have against the vested interests of a 21st-century land-owning elite that is little different from that of Lilburne's day?

Nick Reeves, London

WET AND WISE

I enjoyed Michael Kenneth Cowan's article on rainwater harvesting in the Middle East in ancient times ('Harvesting rain', June), but what a pity he didn't mention some of the exciting work that is being done now, not only in the Middle East but also worldwide, to tackle some of the problems his article highlights. Australian permaculturist Geoff Lawton, for instance, has designed and overseen the implementation of hundreds of permaculture systems featuring on-contour swales. These are ditches that capture rainwater as it flows down a slope, not simply retaining it within the system as a resource, but also reducing the risk of flooding at lower levels.

This simple, low-input solution has been

Daily dilemmas

In each month's issue, we ask a common ethical question that many of us ponder in our day-to-day lives, and people can go to our website and offer their suggestions as to how to answer it. In a subsequent issue we will publish the most practical and engaging selections in the letters pages.

Which is more valuable: wetland habitats – for instance those in and around the Severn estuary – or renewable energy?

Go to www.theecologist.org to have your say

used to turn areas of desert in Jordan into productive, diverse, high-yielding landscapes – crucially, without relying heavily on fossil fuels, irrigation or other resource-intensive inputs. Readers can see an inspiring video of how it has been done in Jordan via the Permaculture Research Institute's website, see www.permaculture.org.au

Dom Marsh, Leeds

FARMLAND FOR FARMING

With regards the *News* story 'Costing world wildlife' (July/August), the UN report attempting to put a price on nature is most timely and it is to be hoped that the *Ecologist* will promote its application to the UK's agricultural land. Recent events surrounding food have surely pushed the intrinsic value of agricultural land well beyond the level that would permit its destruction as a result of building. Perhaps the *Ecologist* should campaign for the reinstatement of the wartime regulation that made it illegal to use agricultural land for any other purpose.

RW Bryant, Essex

JETTISON THE JUNK MAIL

In her paper-saving article 'Paper, scissors, headstone' (July/August), Mandy Haggith correctly advised that it was possible to 'limit junk mail by registering with the Mailing Preference Service'. This service deals with

'direct mail', that is to say mail addressed to you personally. However, it does not deal with unaddressed mail and leaflets delivered by the postperson to members of your household generally, and which Royal Mail calls 'door-to-door items'.

To stop receiving such items, readers can contact Royal Mail (08457 950 950; www.royalmail.com). There is no charge for doing so, although readers should bear in mind that this will mean their household no longer receiving council or government publications or information from political parties.

I would also suggest that another way to save paper might be to refuse the paper napkins offered in cafés and restaurants. Use your handkerchief instead.

Roger Simmons, by email

GOING GREENSBURG

I was charmed by your article on ecovillages (May). They are another source of hope – and so is a town I'd like you to know about.

On 4 May 2007, the town of Greensburg in central Kansas, USA, was hit by a severe tornado that levelled virtually every building. Once the residents recovered from dazed shock, they and others across the state began to realise that they had been presented with a perfect opportunity. Now universities and citizen groups are involved, and building is underway to make the new Greensburg a totally LEED-certified (Leadership in Energy and Environmental Design), dramatically energy-efficient town.

This proved to be a good move for Greensburg. People have since dared to admit that before the tornado, the town, like many others across rural Kansas, was fading, with only its central location and its major attraction – the world's largest hand-dug well – to distinguish it. Now it will alert people from all over the world – and especially from rural Kansas – to the fact that a sustainable town is not only cheaper and more energy-efficient to live in, but also more pleasant.

For more information on Greensburg, see www.greensburgks.org

Karin McAdams, Prairie Village Kansas, USA

CLIMATE CHANGE

HOW MUCH DO WE EMIT?

THE UK'S GREENHOUSE GAS EMISSIONS ARE HIGHER THAN REPORTED

How do you measure a country's responsibility for climate change? By working out how much is produced within its borders? By adding on the impact of aviation and shipping? What about overseas production?

It's a tricky area, but one which has now become slightly clearer following the release of a new report that calculates UK carbon dioxide emissions caused by the nation's buying habits.

The research, commissioned by Defra and carried out by scientists at the Stockholm Environmental Institute (SEI) at the University of York, analysed the CO₂ caused by imports to, and exports from, the UK.

The authors found that in 2004, the UK produced 242 million tonnes (Mt) of carbon dioxide in making goods for export to other countries.

This was dwarfed, however, by the 374 Mt of carbon dioxide produced elsewhere as a result of UK demand for goods and materials. Much of this CO₂ was produced on the UK's behalf in Asia and elsewhere in the less-industrialised world.

The research is significant because it shows how the Government has been able to claim that national greenhouse gas emissions have been falling while consumption has steadily increased. In fact, the study demonstrates that the UK was responsible for at least 37 per cent more emissions than were

officially declared via the Kyoto Protocol to the UN in 2004, and that emissions have in fact been rising steadily since the early 1990s.

Dr John Barrett, one of the study's authors, agreed that applying the research to global greenhouse gas emissions would paint a radically different picture of responsibility for climate change:

'If we continue with the current system we simply get what we call "carbon leakage", whereby emissions are "outsourced" to developing countries that are not yet signatories to climate change agreements.'

Barrett also said that when other greenhouse gases – such as methane and nitrous oxide – were included in the analysis, the UK's contribution would be even higher – approximately 979 million tonnes of CO₂e. This data is to be released this month in a joint report from SEI and WWF.

The research is only the latest to show that official estimates of UK greenhouse gas emissions are far too low. In March this year, the National Audit Office criticised the Government for running two

systems of climate reporting – one overseen by Defra with the figures going to the UN, and the other run by the Office for National Statistics (ONS), which produce widely different figures (see table, left).

The highest estimate for UK greenhouse gas emissions was calculated by Christian Aid in 2007, and looked at the global impact of FTSE 100-listed companies benefiting from UK investment. The analysis pegged the country's responsibility at a staggering 1,388 Mt of CO₂ every year – more than that of India.

UK CO₂ emissions (all 2004 figures)

Emissions within UK borders (as reported to UN):

555.1 Mt CO₂

Source: Defra, 2008

Emissions within UK borders including international shipping, aviation and tourism:

631.7 Mt CO₂

Source: ONS, 2007

Both UK emissions and emissions abroad caused by UK consumption:

762.4 Mt CO₂

Source: Defra; SEI, 2008

Both UK emissions and emissions abroad caused by UK consumption (all GHG):

979 Mt CO₂e

Source: WWF; SEI, 2008

Emissions resulting from UK financial investments around the world:

1,388 Mt CO₂

Source: Christian Aid, 2007

LOCAL DEMOCRACY KEPT QUIET

The Government has actively tried to play down the launch of ground-breaking legislation that could give local communities a direct say in how they are governed, campaigners claim.

The Sustainable Communities Act, which became law in October 2007, was not even given a press release by the Department for Communities and Local Government (DCLG) on the day it received royal assent.

Steve Shaw, campaign organiser at Local Works, the organisation that championed the Act, says the legislation has been kept quiet:

'Officially they [DCLG] acknowledge it and say they will

act professionally; unofficially they have tried to keep it quiet, because they know that if it is successful they'll be inundated with proposals from local communities for change,' he told the *Ecologist*.

From October onwards, local councils in England will be asked whether they wish to 'opt-in' to the scheme. Shaw says that it is now more important than ever to demonstrate support for the Act.

'It's absolutely crucial that people lobby their councillors to opt-in to the new process in the Act when invited [to do so] by Government.'

Local Works is urging people to write to their councillors and council leaders. For more

information, visit www.unlockdemocracy.org.uk

A spokesperson for DCLG was unable to explain why a press release had not been issued to draw the public's attention to the Act, but said that the department had always 'accepted and supported' the legislation.

SOCIAL ECOLOGY COMFORT FACTOR

Are you sitting comfortably? Just how comfortably?

That's what the editors of a special edition of the journal *Building Research & Information* asked when looking at our notion of 'comfort' in relation to heating and cooling our indoor spaces.

The authors suggest that

'manufacturers, designers, scientists and policy-makers' all help to create a one-size-fits-all notion of indoor climate which overrides individual taste.

Why does it matter? Because this stops people taking control over their own environment, instead making them pawns in a game of 'universalising codes and standards'.

The journal's editors note that it is UK Government policy to ensure that all homes are heated to a temperature of 21°C in the main living area and 18°C in other rooms, despite research which has shown that many people prefer lower – or in some cases higher – temperatures.

See *Letters*, page 6.

GO FIGURE...

6 out of **10** adults think that 'many scientific experts still question if humans are contributing to climate change'. **1** in **3** Britons are now growing their own fruit and veg. **Two-thirds** of people want shops to take environmentally damaging products off their shelves. More than **9** out of **10** people want to have a say over planning decisions affecting their local area. More than **8** per cent of the Brazilian Amazon is not legally owned. **52** per cent of Brits said the environment should be the government's priority. **44** per cent said the economy. **5** out of **10** people feel their work is not valued by their employer.

CARBON FOOTPRINT CARBON TRADING

Personal Carbon Trading (PCT) – allocating everyone in the country an emissions limit and allowing the public to trade permits among themselves – looked to have died a death in May when Defra pulled the plug on an investigation into the scheme.

Now, new research by centre-left think-tank the Institute for Public Policy Research (IPPR) suggests that a majority of the public (31 per cent) would prefer a PCT scheme either to carbon taxes or industrial emissions trading.

The authors said they were 'surprised and struck' at the positive response to PCT, and their findings were welcomed.

Polly Toynbee, the *Guardian* columnist, described PCT as 'a completely brilliant scheme':

'When you explain Personal Carbon Trading to people they get terribly excited about it,' she said. 'Tapping into the 'shopping and trading' part of the brain rather than the 'taxation' part of the brain is brilliant.'

INFORMATION TECHNOLOGY ECO COMPUTING

A flurry of reports has helped put the green credentials of IT firmly on the political agenda.

The Climate Group's in-depth study, *Smart 2020*, concluded that by using IT to its full advantage in streamlining logistics, running industrial processes and integrating electronics into our homes and workplaces, the world could avoid 7.8 billion tonnes of greenhouse gas emissions (CO₂e) by 2020 – more than the USA's annual total.

The study followed reports from WWF, the Sustainable Development Commission and the Institute for Public Policy Research, all of which called for greater use of sophisticated video-conferencing equipment to reduce the need for air travel.

NATURAL ENVIRONMENT WORTH THE VIEW

It's taken €10 million and an international research effort, but scientists have finally concluded that a 'high-quality' natural environment has positive impacts on local economies.

The researchers looked at sites across Europe, and examined the links between landscape quality and decisions made by investors and homeowners.

They concluded that landscape quality is 'a primary influence on people's perceptions of particular regions', which in turn can attract skilled employees to an area and



keep them there. More importantly, perhaps, the research showed that 'improving' landscapes could help break cycles of neglect and antisocial behaviour. See www.environment-investment.com

CAMPAIGNING GEORGINA IN COURT

Georgina Downs, founder of the UK Pesticides Campaign, has taken the Government to the High Court over its failure to protect rural residents and communities from exposure to toxic pesticides.

Downs is contesting the Government's notion that a person will only receive an occasional short-term exposure to chemical sprays from one pesticide at a time.

She says that this model leaves rural residents dangerously exposed to cocktails of different chemicals throughout the year, often for decades.

ENERGY COAL IN HOT WATER

The clamour for a moratorium on new coal-fired power stations is growing louder by the day.

In July, the Environmental Audit Committee raised 'considerable concern' over the use of carbon capture and storage as a 'fig leaf' to give coal the go-ahead.

The IPPR joined the fray with a call for a two-year moratorium on coal investment, warning building new coal plants could risk the collapse of the EU Emissions Trading System.

And a report by energy consultancy Pöyry demonstrated that the core argument in the Government's pro-coal policy – that new fossil generation is crucial to 'keep the lights on' – is flawed. Pöyry's researchers conclude that planned renewable energy capacity and energy efficiency moves will be more than adequate to maintain electricity supplies until 2020 at the earliest.



WASTE NOT...

It's a common Autumnal sight – pavements smeared with fallen apples and pears from neglected fruit trees.

Now an initiative in Sheffield has sprung up to collect unwanted produce and redistribute it on a non-profit basis to community cafés, nurseries and individuals across the city.

For information, see www.growsheffield.com

LAND REFORM

A feasibility study released by the Ecological Land Cooperative has shown that there is scope to launch an 'ecological land fund', from which investors will be able to earn modest returns, while allowing the cooperative to buy parcels of land for use as smallholdings. For more information, visit www.ecologicaland.coop

STOCK UP

Yorkshire businessman and former bakery manager Nic Cooke has launched a website that will allow caterers and supermarkets with excess food stocks to advertise them quickly and easily online, with the hope of sending it to a buyer rather than the bin.

Offering a money-back guarantee for food advertised but not sold, the site donates money to a charity for each sale. See www.showthestock.co.uk

AGRICULTURE

ORGANIC BY DEFAULT?

AS FERTILISER PRICES SOAR AROUND THE WORLD, WILL THE MARKET SHEPHERD US TOWARDS LOW-INPUT OR EVEN ORGANIC FARMING?

One hundred and seven per cent; 98 per cent; 514 per cent – these numbers represent the percentage increase in the price of ammonium phosphate, urea and rock phosphate fertilizers respectively between April-June 2007 and April-June 2008, according to recent World Bank figures.

As the crucial ingredients in intensive farming, these price rises are starting to lead to global resource dash. The *Times* newspaper has reported that the natural distribution of finite phosphate rock resources around the world could create 'phosphate superpowers', with OPEC-like influence over supply.

Similarly, the Canadian province of Saskatchewan has been dubbed the 'Saudi Arabia of potash' – home to one-third of the world's known reserves of potassium. Mining giant Rio Tinto has already declared its intention to corner 10 per cent of the world's potash market, and BHP Billiton has bid £141 million for a share of the Canadian reserves.

Elsewhere, however, the soaring percentages and spiralling costs are driving farmers to more sustainable solutions.

In Australia, scientists have been promoting the sowing of natural 'green manure' crops such as vetch in between cash crops to reduce the

need for nitrogen fertiliser. Dr Ian Rochester of the Australian Commonwealth Scientific and Research Organization (CSIRO) told *The Land* journal that the vetch not only increased yields but also profits, by up to \$540 per hectare, as well as storing more carbon in the soil.

In Japan, a former refuse worker has set up a company collecting unsold rice balls, sandwiches and milk from a network of 1,200 convenience stores and turning it into pig feed. Hiroyuki Yakou's success is down to the soaring cost of animal feed as a result of increased fertilizer prices.

In the UK, farmers are snapping up supplies of sewage sludge as fast as they can. Water utility Severn Trent has seen a 25 per cent rise in demand for its sewage sludge since the beginning of 2008. Although there are serious concerns over the use of human waste on arable land, notably because of its chemical contamination by our detergents and medicines, even the Soil Association now tentatively supports reinvestigating the practice for non-food crops, if sewage can be adequately purified first.

But one US scientist believes we need to go further still. In an article published by the Institute of Science in Society, Dr Stan Cox, of The Land Institute, Kansas, argues the case for a transition to 'perennial agriculture': using crops that can regrow after each harvest and so develop deep, stable root systems that make more efficient use of nutrients.

Cox describes current organic researchers as merely improving 'the software' of agriculture, rather than tackling a 'dysfunctional hardware' that has made annual crops our cultivars of choice.

See www.landinstitute.org for more.



ENERGY

SOLAR POWER

A vision for clean power in Europe and North Africa has received a boost with the launch by French premier Nicolas Sarkozy of the Mediterranean Solar Plan, at the summit for his newly formed Mediterranean Union.

The Plan would borrow heavily from an existing proposal known as TREC, or the Trans-Mediterranean Renewable Energy Cooperative, which outlines the building of Concentrating Solar Power (CSP) plants around the Mediterranean, and the installation of an electrical supergrid to transport clean energy across Europe, North Africa and the Middle East.

The supergrid would transmit electricity using High-Voltage Direct Current (HVDC) power lines, which are more efficient than conventional power lines and lose only 3 per cent of their

electricity energy every 1,000km.

Dr Gerry Wolff, coordinator of the TREC-UK, says that the HVDC supergrid will also support other forms of renewable generation:

'When you combine a whole range of different renewable energy sources, you get a much more robust system,' he said. 'There is a natural alliance between all renewables and a large-scale grid.'

MPs can sign an Early Day Motion calling on the UK Government to support the development of a CSP network and supergrid. View the EDM at www.tinyurl.com/5vqc6q

EMPLOYMENT

A FOUR-DAY WEEK

The state of Utah has become the largest civil body in the USA to follow the fast-growing trend of adopting a four-day work-week.

From the beginning of August, as many as 17,000 state

employees will work 10 hours a day, Monday to Thursday, followed by a three-day weekend.

More than eight billion barrels of oil are used for daily commutes in the US, prompting a number of states and cities to implement voluntary schemes in order to cut costs and drive down emissions.

However, Utah has gone further in being the first to introduce state-wide mandatory measures across all non-essential services, triggering what now appears to be a larger movement.

A survey conducted after the



announcement shows that the majority of local government agencies will be following suit, and major employers are starting to see the sense in the scheme.

WASTE

LOW-TECH RECYCLING

The Japanese Ministry of the Environment has set up a committee to look at how its citizens could wash and reuse polyethylene terephthalate (PET) plastic bottles.

Accounting for approximately 60 per cent of the country's household waste by volume, the government wants to encourage people to return PET bottles to retailers, possibly through the use of a deposit system.

Elsewhere, Scottish environment secretary Richard Lochhead has given support to the idea of reusing bottles and food containers in a new consultation document. The

scheme would work either through a deposit system or by introducing 'reverse-vending' machines, which would pay consumers for each item returned.

Drinks manufacturer Barr, which makes Irn-Bru, has recently increased the rate it pays for returned bottles from 20p to 30p, in a bid to see more of its bottles come back for reuse.

SUPERMARKETS WAL-MART WORRIES

It is the favourite defence of embattled supermarket execs – that the arrival of a new megastore will increase sales for all other businesses in the area.

Now, the preliminary results from one of the first academic studies of the claim suggest that it is false.

Researchers at the University of Chicago used survey and market data to assess the impact of a new Wal-Mart store, built in one of the city's neighbourhoods in 2006. They found that the Wal-Mart store 'displace[d] a significant amount of sales from its home zip code' and that 'proximity to Wal-Mart may have increased the probability that a business closed during the first year of Wal-Mart's operation.'

The researchers are now looking to examine whether a supermarket brings new job opportunities to a community or simply replaces those that exist already. Read the study at www.tinyurl.com/6f2jrl

GREENWASH THE MINER'S TOUCH?

Whatever energy firm E.ON touches seems to turn to... coal.

Green MEP Caroline Lucas used her slot at the recent *Guardian* Climate Change Summit to attack the company's sponsorship of the event, describing it as 'a cynical move to try to repair its damaged reputation'.

And the same day, Oxford climate activist blockaded the offices of E.ON's PR firm, Edelmann, for collusion with E.ON in 'greenwashing' the proposed new Kingsnorth power station.

NOW THAT'S... PROGRESS

- 1** When is a lake not a lake? When it's been reclassified by the Canadian government as a 'tailings impoundment area'. Read 'toxic waste dump for nearby mining companies'.
- 2** What best to do in the midst of a world food crisis? Why not follow Cargill and break ground on a new \$22-million soy-based plastics plant to mop up all those spare soy beans?
- 3** A Rhode Island school is allowing parents to track their children's movements using microchips in their bags. Parents can log on and check if their child got on the school bus or not.
- 4** Britain's BMI airline will fly almost-empty aircraft this autumn in order to keep hold of valuable take-off and landing-slots. The firm's deputy chief executive said BMI would not be alone.

BIODIVERSITY NATURE'S MEDICINE

There is mounting evidence to show that preserving the natural world helps keep us healthy too.

Speaking at a scientific conference in Paramaribo, Suriname, Dr Thomas Gillespie of the University of Illinois presented evidence to show that primates living in areas of logged or degraded rainforest carried more potential diseases than those in undisturbed areas.

Gillespie predicts that this could have an impact on human HIV/AIDS sufferers, who are more vulnerable to the infections carried by primates.

Meanwhile, US scientists studying the prevalence of the bird-borne West Nile virus have found lower levels of human

infection in areas with high levels of bird diversity.

The team studying the virus says that because the species most likely to pass on the virus – rows, jays, thrushes and sparrows – are present in smaller numbers when biodiversity is high, they have less opportunity to pass the disease to people.

CLIMATE CHANGE WEEDS WILL WIN

Climate change sceptics are right: increased levels of CO₂ will make some of our plants grow better. Trouble is, it may be the weeds reaping the biggest gains of all.

Plant physiologist Hugo Rogers and a team at the Agricultural Research Service in Auburn, Alaska, found that elevated levels of carbon dioxide promoted the growth of purple and yellow nutsedge – fast-growing invasive weeds that plague North American farmers and gardeners. Worse still, purple nutsedge can also tolerate very high temperatures, and both species made more efficient use of water when exposed to high CO₂ levels.

The ongoing research adds to work completed in 2003 predicting that the Canadian thistle could grow 72 per cent faster under conditions of climate change.



TICK-TOCK

A coalition of green groups has launched the '100 months' campaign, which is urging committed action on climate change before the chance of keeping greenhouse gas concentrations below 400 parts per million CO₂e passes us by in 2016.

The campaign, backed by the UK-based New Economics Foundation, takes account of the probability that the Earth's own feedback mechanisms will increase the rate of global warming still further.

For details, see www.onehundredmonths.org

BATTLE CRY

Veteran NASA climate scientist James Hansen has called for the chief executives of the world's largest oil companies to be put on trial for crimes against humanity and nature.

Hansen used the 20th anniversary of his whistleblowing speech to the US Congress, in which he spelt out the reality of global warming, to call for action against Big Oil on the grounds that the companies involved have actively spread doubt about global warming.

He blamed oil lobbyists within Washington.



Is there an alternative to the Severn barrage?

Will the temptation of vast amounts of clean, tidal energy lead us to ignore the chance of serious environmental damage? **Mark Anslow** and **Peter Clark** report

Engineers have eyed the Severn estuary as a potential source of energy for more than 150 years. With the second highest tidal range in the world, the 40-mile-long stretch of water, which runs from the second Severn crossing, in South Gloucestershire out into the Bristol Channel, is home to the lion's share of the UK's tidal energy resource.

Over the past century, several studies have looked in depth at the possibility of generating electricity from the estuary, but each one has concluded that a project would either be too expensive or too environmentally destructive. Research shows that building a barrage – a huge concrete dam – across the estuary could reduce the amount of unique intertidal habitat available to wildlife by up to 65 per cent, with a serious impact on biodiversity. The area is designated as both a Special Protection Area under the EC Birds Directive and a Special Area of Conservation.

In 2006, the Government asked the Sustainable Development Commission (SDC) to look again at the problem. The SDC reported back in 2007, saying that it was possible to generate energy from the Severn estuary, but with strict conditions. These included finding or creating compensatory habitat to replace that lost as a result of a barrage project, making sure that EU directives on habitat and bird-life were met, and a recommendation that the project be publicly run – not a private-sector initiative – to avoid short-termism.

Dizzy with the thought of being able to hit its EU renewable energy targets, the Government announced in July this year that it would plough ahead and examine 10 different proposals for harnessing the power of the estuary, with a shortlist to be drawn up in the coming months.

Over these pages, we examine some of the more promising and potentially less environmentally destructive alternatives to the favoured Cardiff-Weston barrage.

Cardiff-Weston barrage

The most well-studied option and often referred to simply as 'the Severn barrage', this proposal would see nearly 10 miles of concrete and rock infill stretch between Lavernock Point, Penarth, west of Cardiff, and Brean Down, near Weston-super-Mare. The barrage would allow the tide to flow up the estuary through sluice gates, then shut the gates and wait for a water level difference of up to 6m. It would then release the water through 216 turbines, generating more electricity than any other single power source in the UK.

That power would come at a cost, however: the barrage would flood valuable intertidal habitat upstream and reduce the tidal range of the estuary overall by 11 per cent, affecting the 65,000 birds that overwinter there. Sediment would be churned up and deposited upstream, fish could be killed by the turbines and ships would have to use vast locks built into the structure to travel up-river. It is opposed by most of the major environmental groups.

For more information, see www.sd-commission.org.uk

- **Terawatt hours of electricity produced each year = 17**
- **Output as a percentage of UK electricity = 4.2 per cent**
- **Cost per kilowatt hour = 3.6-22.3 pence/kWh**
- **Size = 15.9km in length**



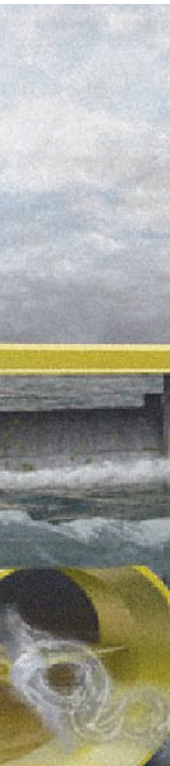
Tidal fence

Unlike a barrage, the fence would not 'dam' the estuary, but instead use a string of underwater turbines to generate electricity from the natural flow of the tide. There would be much less of an effect on the estuary's tidal range than with a barrage, and both ships and fish could pass easily.

The fence might also generate electricity at more useful times of day than a barrage, though it would produce a fraction of the energy of other proposals.

For more information, see <http://tinyurl.com/6pg6kh>

- **Terawatt hours of electricity produced each year = 4**
- **Output as a percentage of UK electricity = 1 per cent**
- **Cost per kilowatt hour = (uncosted)**
- **Size = 9km in length**



Tidal reef

Halfway between a barrage and a fence, the tidal reef would see an array of floating turbines connected to concrete bases and strung between Aberthaw, Wales, and Minehead in Somerset. The brainchild of veteran hydro engineer Rupert Armstrong-Evans, the reef is estimated to require 10 million tonnes less rock infill than a barrage, and, because it would operate with a water-level difference of just 2m, is predicted to have a smaller impact on the estuary's tidal range. Fish should be able to navigate the slow-turning turbines, and ships may be able to sail through 'doors' in the reef, rather than using slow and expensive locks. Low-tech components could make the project cheaper than the barrage, and the electrical output would be smoother and more constant.

For more information, see www.evans-engineering.co.uk

- **Terawatt hours of electricity produced each year = 20**
- **Output as a percentage of UK electricity = 5 per cent**
- **Cost = (uncosted)**
- **Size = 20 km in length**



Tidal lagoons

Lagoons are artificial enclosures constructed in the estuary with turbines built into the walls. They operate on both the ebb and flow of the tide, as the water fills, and then empties from, the lagoon enclosure. Because the lagoons wouldn't block the estuary in the same way as a barrage, they would allow the passage of fish and ships without the need for ladders or locks.

Having lagoons may also reduce the problems associated with a build-up of sediment. There are fears that the 'channel' created between the three proposed lagoons would lead to faster currents in the estuary, however, which

could bring other problems.

The lagoons would also require much greater quantities of aggregate 'filler' to build than the barrage. The proposal is supported by Friends of the Earth but opposed by RSPB.

For more information, see www.tidalelectric.com

- **Terawatt hours of electricity produced each year = 6.5-24, depending on scale**
- **Output as a percentage of UK electricity = 1.6-6 per cent**
- **Cost per kilowatt hour = 2.0-26.72 pence/kWh**
- **Size = a minimum of 82.2km of embankments**

'Low-tech components could make the tidal reef cheaper than the barrage, and the electrical output would be smoother and more constant'

Shoots barrage

A small barrage just downstream from the current M4 Severn crossing. A barrage in this location was originally proposed in 1933 by Lord Brabazon, and has been revived as an opportunity to generate electricity as well as to provide a high-speed rail link from England to Wales.

Less than half the size of the Cardiff-Weston Barrage, the Shoots barrage would be less environmentally destructive, could be built in five years and would be compatible with other technologies, such as tidal lagoons.

It would harness only a tiny amount of the estuary's available power, however, and would still be far from environmentally benign: projections show that the barrage could lead to increased concentrations of certain metals upstream of the barrage, high levels of siltation and lower levels of dissolved oxygen in the water, which could affect wildlife.

For more information, see www.sd-commission.org.uk

- **Terawatt hours of electricity produced each year = 2.75**
- **Output as a percentage of UK electricity = 0.7 per cent**
- **Cost per kilowatt hour = 3.03-15.4 pence/kWh**
- **Size = 6.5km in length**





Through a dustbin darkly

The commodification of our rubbish has left our society in thrall to waste management conglomerates that have an interest in keeping us polluting, says **Martin O'Brien**

In his 1968 science fiction novel *Do Androids Dream of Electric Sheep?*, Philip K Dick imagined a post-apocalyptic world disappearing under the combined impacts of chemical and radioactive pollution, and the inescapable invasion of personal detritus into every nook and cranny of urban existence. Set in San Francisco in 2021, this bleak novel portends a ruined, rubbish-covered world that has been largely abandoned in favour of space colonisation; a world where one of the most important industries is waste management

Not everything that Dick predicted has come to pass, but, as with all good science fiction, the most illuminating parts of Dick's story concern his reflections on the present rather than the accuracy of his divinations. In Dick's world of 2012, waste management is a central, rather than peripheral, dimension of urban and rural existence; something that affects every individual on the planet in the most direct and immediate way imaginable. In the world of 2008, this is already a reality.

Of course, there are different ways in which Dick's waste management prophecy might have played out. 'Ownership' of waste management might have been placed with its producers; with local or central government; regions or communities; with families or individuals; with co-operatives. The economic consequences of waste management might have been shared on principles of social equity, so that the poorest constituencies do not face the highest costs. The technological and operational characteristics of waste management might have been devised to emphasise useful employment, local control, community renewal and/or energy and resource efficiency.

What we have, in fact, are massive contracts with multinational conglomerates that tie waste management to private sector profits for decades – 25 years being the contractual norm. By the early 2000s, three-quarters of all refuse collection contracts were held by just four companies: Onyx, Sita, Serviceteam and

Cleanaway. Six more held the remaining quarter.

The top four have global turnovers measured in billions of pounds, while the remainder manage turnovers of mere hundreds of millions. These contractual arrangements do indeed confer political responsibility for waste management on Local Authorities (LAs), but without any direct operational control. Instead, those authorities are left trailing in the wake of private sector responses to national and transnational regulatory arrangements.

It is private sector responses to policies (on which they have already lobbied vigorously) that determine what is and is not allowed to happen to your waste. If you do not like the political make-up of your local council you can

“Amazingly complicated trading and fiscal arrangements ensure cash flows from the public streets to the corporate elites

vote them out of office within four or five years. If you do not like the operational characteristics of the conglomerate that deals with your waste, that's just tough. You will have to wait for 25 years or more until the council makes another choice without any reference to your preferences; or, more likely, until some other multinational conglomerate you don't like takes over from the one you currently don't like.

Some people think of this situation as an instance of the 'privatisation' of public functions, but we should be careful about the terminology. Privatisation, to be sure, is certainly happening, but in relation to the giant contracts with conglomerates it is more accurate to say that waste management is

being subjected to processes of marketisation, and waste itself to commodification.

The direction of waste management policy since the early 1990s has been to open up markets for municipal wastes; to make those wastes into tradeable, exploitable, profitable commodities. Even the titles of consultations and draft strategy documents give the game away with more or less commendable clarity: 'Making Waste Work' (1995), 'Less Waste, More Value' (1998), and the marvellously cryptic 'A Way With Waste' (1999) all proposed to 'inform' consumers, reach 'voluntary agreements' with producers and retailers, and 'incentivise' producers, consumers and disposers.

Rhetoric aside, none of them promised (or showed how) to prevent waste from arising. Indeed, their aim and purpose was quite different: not to prevent or reduce waste in the first place but to organise its profitability in an economy of rubbish values.

In order to marketise waste it has been necessary to develop a bewildering array of instruments, rules, regulations, stipulations, subsidies, permissions and exemptions. From the Local Government Act of 1988, with its extension of compulsory competitive tendering from infrastructure projects to public services (and exemption clauses enabling LAs to hold equity in public service ventures), through the waste disposal 'companies' provisions of the 1990 Environmental Protection Act, to the 'best value' requirements of the 1999 Local Government Act, the legislative carousel has consistently spun on the axis of markets, profits and contracts, rather than accountability, involvement and control.

In turn, the new milieu of waste management has seen the emergence of amazingly complicated trading and fiscal arrangements for ensuring that the cash flows from the public streets to the corporate elites – such as the packaging reclamation notes, regional price 'weights' to compensate for 'rubbish miles' and – my personal favourite – the 'Lipworth Modified Converter Levy' devised to raise funds

from the waste-packaging chain.

None of these has anything to do with 'privatisation' as commonly understood, the wholesale transfer of public services to private hands. They are all about the intensely political process of turning waste management into a commodities market rather than an environmental responsibility. In order to privatise anything you first have to create a market in which private interests can predominate over public ones, and this is what is happening to our rubbish.

In these circumstances, if the market says your electronic waste can release profits by being shipped to India then shipped to India it will be. If the market says your 'recycled' glass can release profits by being crushed and sold as fish-tank bedding then crushed and sold as fish-tank bedding it will be. If the market says that you – a private individual in a private household – must do the (unremunerated) work of sifting, sorting, storing and delivering waste commodities for global corporations to exploit then this is what you will do.

Remember, though, that when the market says there is no more profit to be had out of any of these things, your electronic waste and glass will be dumped and your paper buried or burned. You have no say in the details of the decades-long contracts and esoteric political arrangements that make the private interests of global conglomerates predominate over the public interests of your local community.

Perhaps it's time for a different arrangement, one that puts us as citizens – not consumers or disposers – at the heart of any future waste management policy. In 1905, in the London Borough of Hackney alone, some 5,000 to 6,000 households every week refused to hand over their waste for collection precisely because of a suspicion that others were profiting from the valuable resources contained in their dustbins.

We ought to learn at least this lesson from our forebears: the marketisation of waste means that commercial organisations have a vested interest not only in the continued production of detritus, but also in exploiting the sorting, sifting and storing labours that householders are increasingly compelled to provide for free by the legal regime surrounding the commodity of waste. **E**

Martin O'Brien is a sociologist and criminologist at the University of Central Lancashire, and author of *A Crisis of Waste? Understanding the Rubbish Society*

CURRENTS

Yes we can?

It's December 2008 and the US's first 'billion-dollar' election is over. In Poznan, Poland, Republican climate negotiators Harlan Watson and Paula Dobriansky are spending their final few weeks in office at the Kyoto talks, sticking to form and sabotaging the prospect of an international climate agreement. As the Conference of Parties reaches its climax, however, the tall shadow of President-elect Barack Obama falls over the US delegation. Fresh from a landslide victory, the Illinois Senator has done what his team had hinted at during the primary season – he's turned up in Poland and is calling for mandatory cuts in emissions.

I know what you're thinking: 'Oh, what a beautiful thing that would be' – but would it really happen? How green is Obama?

In May 1998, at the urging of the state's coal industry, the Illinois legislature passed a bill condemning the Kyoto global warming treaty and forbidding state efforts to regulate greenhouse gases. Barack Obama voted 'aye'. In fact, just four years ago he was running for office flanked by mine workers to proclaim 'there's always going to be a role for coal' in Illinois. Bizarrely, and in contrast, at around the same time Senator John McCain was joining Hillary Clinton on a trip to see melting glaciers in the Arctic, asking: 'How much damage will be done before we start taking concrete action?'. These past few years, McCain has styled himself as a



moderate attacking Bush on the climate and has been running ads under the slogan: 'Record gas prices, climate in crisis. John McCain says solve it now'.

But oh, how things have changed. In the past few months, as the candidates' poll ratings

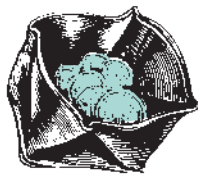
crossed and Obama established a lead, so their divergent climate policies have crossed: the Democrat adopting a more progressive stance; the Republican playing to his base. Obama now says climate change is one of his top three priorities, and calls to make industry pay for all 100 per cent of its carbon pollution permits. McCain has tacked to the right, throwing his support behind reversing a ban on oil-drilling offshore, offering permits to pollute for free. That said, at the time of writing Obama is busy softening his position on oil-drilling, so the proof of that pudding will have to wait.

Oil and gas industry executives and employees donated \$1.1 million to John McCain; a big chunk of that came in after his June 16 speech calling for an end to the ban on offshore oil-drilling. Some restaurants you pay when you order, others when you leave – or perhaps he just changed his mind after a chat with one of his 22 senior campaign staff who used to work in Big Oil.

You can only conclude that much of McCain's environmental rhetoric of the past few years was about distancing himself from the contaminated Republican brand and burnishing his record as a maverick. He voted against support for renewables at every turn, and against measures to protect national parks. Obama has supported moves to make the US's car fleet more efficient, and legislation to promote renewables and efficiency in buildings, while pledging \$150 billion over 10 years towards clean energy projects. Maybe that's change we can believe in. Maybe he will go to Poland. But first he has to win. **E**

Joss Garman is an environmental campaigner and journalist

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Much of McCain's
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FINANCE

The money pit

Commercial banks should be forbidden from creating 'virtual' money, argues **James Bruges** – our debt-and-interest economies can only lead to collapse or war

If you wonder why our economy is so chaotic, don't ask the economists: they might be too embarrassed to answer. Steady growth suddenly goes haywire. Banks, hugely profitable one minute, become insolvent the next. Savings disappear. This doesn't happen with real things. Eat or use them, they gradually reduce; they don't vanish into thin air. Money is a 'virtual' commodity, which is why the neoliberal agenda, created by economists with fantastical mathematical superstructures founded on something that can vanish overnight, is so dangerous.

To grasp the virtual nature of bank account money, go into a bank and ask for £100,000 to set up in business. The bank manager doesn't go down to his vault, he simply types figure into a computer. Suddenly this money is 'in circulation'. Go back next week, having used none of it, say you've changed your mind and he cancels the loan. The money didn't exist; then it existed for a week; then it disappeared. 'The modern banking system manufactures money out of nothing,' said Lord Josiah Stamp, former director of the Bank of England, in 1937. 'The process is perhaps the most astonishing piece of sleight of hand that was ever invented.'

More than 95 per cent of the country's money is created in this way. Coins and banknotes represent less than 5 per cent, and the banks want to turn even these into bank account money on which they can charge interest by

persuading you to use plastic for purchases.

If you or I created money by counterfeiting banknotes we would be sent to jail. Every pound these commercial institutions create attracts interest, which is why banks want you to take up more debt. Even the government, for its Public Sector Net Cash Requirement, borrows money from these private institutions and pays them interest. So wealth is extracted from the real wealth creators – commerce, the public sector, you and me – fat cats amass fortunes and government bows to the dictates of the hugely powerful financial sector.

If you want to buy a house, the banks offer 100 per cent, even 120 per cent mortgages – or they did before the house of cards collapsed. This pushed up prices to unreal heights, landing many of us with unsustainable debt. But surely banks would suffer if we couldn't pay interest on these rash loans? To get themselves off the hook and continue with this perfidious practice they devised a cunning plan. They bundled up our debt with other assets and sold these bundles to institutions – many of them foreign sovereign funds – that were prepared to take them on trust, the fools.

Vastly more money is created internationally. Until Saddam Hussein tried to insist on euros, oil could only be bought in dollars, so countries needed to build up reserves when selling their goods. Result: most trade is in dollars. They cost the US nothing to create, but other

countries can only get them by sending produce and minerals to this centre of empire. The money system, therefore, has been responsible for excessive consumption in the US and debt in the developing world. From this vast hoard, \$2 trillion dollars slosh around the world every day in a gambling spree on the relative value of currencies. 'When the capital development of a country becomes the byproduct of the activities of a casino,' said John Maynard Keynes, 'the job is likely to be ill-done.' George Soros likened it to a wildly swinging demolition ball, destroying banks and even countries from time to time.

Money is created as debt. The fact interest has to be paid means there must be more money next year than this year. Growth, in a debt-based economy, is a necessity. Without it, banks wouldn't bother to create any money (debt), as they would not be able to extract interest. The choice is not growth or stability, it is growth or collapse. And when money disappears, taxpayers and mortgage holders are left with the massive debts created by the madcap theories of economists who serve the greed and irresponsibility of bankers.

Endless growth is impossible in a finite world where the CO₂ we have put into the atmosphere is dangerously excessive, where industrial farming destroys the soil, animal husbandry creates breeding pandemics and carbonic acid in the oceans could collapse the entire marine food chain.

A scientist, not an economist, noticed that a debt-and-interest economy is unscientific. In the 1920s, Frederick Soddy pointed out that if Jesus had invested £1 at today's interest rate it would now be worth the world's weight in gold. This concentration of wealth must inevitably be corrected from time to time with revolution, wars or economic collapse.

Commercial banks should be forbidden from creating money.

GOOD BUY WORLD

PETER RIGG



We would still pay banks a fee for handling money, but all the money needed for exchange should be created, free of interest, by a central authority, which should operate independently but be democratically accountable to Parliament for its performance. It is also ludicrous to use the same currency for buying cabbages from a grocer, for long-term savings and for international trade. Economists must relate money systems to the needs of communities rather than corporations. This can be done at local and global levels.

In a recession it is often local currencies that allow normal life can carry on, whether LETS schemes or the plethora of scrip issues in the 1930s or the municipal currencies that kept Argentina alive between 1999 and 2002. So it would probably be better for local currencies to be arranged on a regional, not national, basis, where each can adjust against others to suit local conditions, within the framework of a reference currency like the euro. The vitality of the Pacific Ring, where Hong Kong, Taipei and Singapore each had a currency, indicates the value of this flexibility. National currencies tend to favour only one part of a country at the expense of other parts: the south in England, the north in Italy (when the lira was in use). In China, 23 provincial currencies referenced to the renminbi could stimulate internal commerce and weld the country into a coherent economic unit less reliant on international trade for its prosperity; this would be a powerful force for preventing fragmentation.

At the global level, a currency for trade should be introduced that is independent of national currencies. Keynes proposed a monetary system that would have made it impossible for countries to sink into debt. They would have to keep imports and exports roughly in balance, and an International Clearing Union (ICU) would cancel any excess accumulation of the international currency, the 'bancor'; so there would be an incentive for wealthy countries to invest in the economies of poor countries. 'Ideas, knowledge, art, hospitality, travel – these are the things that should by their nature be international,' he said. 'But let goods be homespun whenever reasonably possible and, above all, let finance be primarily national.'

With the economy entering a period of turbulence, now is the time to make changes to the faulty systems on which national and global economies are based. **E**

James Bruges is an environmental campaigner and author of *The Big Earth Book*

POST-CARBON LIVING

Peak oil is welcome

Climate change is a problem of fossil fuel dependency, and solving it requires reducing that dependency quickly and dramatically.

From a policy standpoint, however, climate change is hard to address. Because the worst of its impacts may come decades from now, its solution is framed as a moral imperative: we should reduce fossil fuels for the environment and future generations. Many policy-makers genuinely want to do the right thing, but when a choice arises between climate protection and economic growth, growth wins nearly every time. Because 85 per cent of world energy comes from fossil fuels, it is hard to find a way quickly to end their use without a severe reduction in energy and a contraction of the economy. Any politician campaigning for economic contraction faces a tough battle.

The peaking in production rates of oil, coal and natural gas presents a different problem. Again, it is one of fossil fuel dependency, but in this case, instead of a sink (or pollution) dilemma, it is one of source (or scarcity). Fossil fuels are finite. Depletion ensures that the rate of extraction of these substances will soon start to decline, wreaking havoc on industrial economies, perhaps leading to societal collapse.

Will peak oil solve the climate problem? No! It is true most models of future carbon emissions overestimate the fossil fuels that



can be extracted in coming decades. Indeed, studies suggest depletion will hold carbon emissions to a level such that atmospheric CO₂ concentrations won't significantly exceed 450 parts per million (ppm) – the target often mentioned by IPCC.

However, recent research reveals climate sensitivity has been underestimated, so our target should be 350ppm – a level surpassed decades ago. Averting catastrophe means reducing fossil fuel use more quickly than depletion alone can effect.

Will addressing climate change mitigate the impact of peak oil? Not unless extremely stringent emissions policies reduce consumption rates ahead of depletion. But, as noted, such policies are a tough sell on the basis of moral argument alone.

Depletion adds more economic weight to the necessity of addressing climate change. Consider future supply scenarios for coal: if, as studies indicate, world coal production starts falling within two decades, coal will soon become much more expensive. New coal power plants thus become a bad bet for purely financial reasons, and renewable energy sources and conservation start to look much more attractive.

Peak oil kicks the discussion into overdrive. Soaring petroleum prices are creating crises for the trucking, airline and automobile industries, and contributing to rapidly rising food costs. These impacts rivet the attention of policy-makers. Reducing oil dependency is increasingly seen as a matter of economic survival.

Taken together, climate change and oil/coal/gas depletion form an airtight argument for rapidly weaning society off fossil fuels. Maintaining dependency is not an option; our only choice is whether to reduce it proactively and intelligently, or let dire events drive reactive policies. **E**

Richard Heinberg is a Senior Fellow of the Post Carbon Institute and author of *Peak Everything*

“Peak oil kicks the discussion into overdrive. Reducing oil dependency is seen as a matter of economic survival”



MARINE LIFE

Saving our seas

The Government says it realises our oceans are at risk from pollution and overfishing, says **Haris Livas-Dawes**, so why won't it produce a Marine Bill with more teeth?

Our seas are dying. We've destroyed, polluted, over-exploited and overfished. Cod and herring, the two mainstays of the UK fishing industry, are in terminal decline, and whiting, plaice and sole are at grave risk. Trawlers raking over the sea bed have hoovered up everything in their path, wanted and not-wanted, including the very stones of the sea bed. Our need for cement to build ever more houses and roads has led to the aggregate industry removing too much sand and gravel, putting the final nail in the coffin of biodiversity. Add to this the assault of pollution and the symptoms of climate change apparent in the sea, such as greater acidity, and the situation becomes unsustainable.

Who's upset by all this? Well, since water means life, everyone should be. Obviously the environmentalists are – and even the UK Government. DEFRA has just published a draft Marine Bill, which says that 'protecting our marine environment is a high priority'.

The bill recognises the many commercial interests at stake and so is quite cautious (rather like the Climate Change Bill before all the irrefutable scientific evidence surfaced). It calls for the protection of the sea over a network of sites covering 14 to 20 per cent of our seas.

Unfortunately, this is not enough and Marinet – the marine arm of Friends of the Earth – has responded with a submission to MPs including all the scientific evidence in favour of giving the bill some teeth. It calls for a bill that places a duty on the secretary of state to establish an ecologically coherent network of Highly Protected Marine Reserves covering at least 30 per cent of UK seas out to 200 nautical miles.

The wording is important. 'Places a duty' means that the secretary is responsible and cannot simply opt out. 'Ecologically coherent network' means that the protected areas have to be mutually supportive. It is no good spotting marine reserves here and there in isolated pockets without scientifically established links. The word 'network' implies more than one or

two; '30 per cent' is a scientifically established figure and 'highly protected' is a key phrase.

The UK has already established three marine reserves, but only one is viable. The others are anything but highly protected; indeed, exploitative activities are still occurring in them.

Marinet's wording means the entire ecosystem must be managed, from spawning fish to all kinds of sea creatures and the sea bed itself. This kind of protection would conserve the full marine biological system. DEFRA usually gives a lot of weight to commercial interests and their short-term profits, but if the full system is not protected we are going to see the extinction of our fishing industry.

The government's Marine Bill is actually

“
Highly Protected
Marine Reserves have
been established
elsewhere in the
world. All fishing is
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fish to grow larger and
produce more eggs

mandated by the EU's Habitats Directive, along with a number of other international, European and UK commitments, but the Marine Protected Areas mentioned in the bill are not the same as Highly Protected Areas. And if at least 30 per cent of the areas are not highly protected it will not stop the collapse of the ecosystem. Early Day Motion 1141 supports the Marinet proposal.

Highly Protected Marine Reserves have been established elsewhere in the world with dramatic results. All fishing is prohibited, allowing fish to recover, grow larger and thus produce more eggs. These eggs 'seed' the seas

beyond as the larvae drift out on currents. The result is more fish in the sea. There is also space and time to support the recovery and restoration of degraded habitats.

In the late 19th century there were 10 times more fish such as cod, haddock, plaice and ling in our waters than today. Dr Callum Roberts, professor of marine conservation at the University of York, has written: 'The only way to counter the shifting baseline slide toward ever-greater environmental degradation is to look to the past and find out what life the seas are capable of supporting. When we know better what is possible, we can seek ways to bring it back, like marine reserves that are protected from all fishing.'

In several letters exchanged between this writer and Jonathan Shaw, the minister responsible for marine issues, he does not promise highly protected areas. He writes: 'Not all sites will require such a high degree of protection and therefore the bill allows for us to tailor the level of protection according to the conservation needs of individual sites'. He does say: 'We expect that some Marine Conservation Zones will need to be highly protected sites. In areas where we are aiming for full recovery, for example, the new mechanism will allow us to set stringent conservation objectives, which require the exclusion of all damaging or potentially damaging activities, effectively creating highly protected marine reserves.' There is no specific percentage, however, as Marinet deems necessary.

'I agree dialogue between all stakeholders will be vital,' Mr Shaw writes. The 'Finding Sanctuary' project has already begun in south-west England and, he says: 'we have asked Natural England and the JNCC [Joint Nature Conservation Committee] to establish similar stakeholder-led projects for other regional seas, including the North Sea and English Channel.'

A recent meeting between the Marinet Marine Bill team and Marine Conservation Society officers discussed the commercial interests that will have to be taken into

consideration. Most contentious will be what happens in our territorial waters. Beyond the 12 nautical miles and up to 200 it shouldn't be too difficult to identify broad areas to set aside. Perhaps the best way is to start with the contentious areas region by region, and get common agreement incrementally – moving from 2 per cent to 5 per cent and so on.

All this will take time, however, and much time has already been wasted (the Royal Commission's report on the dire situation in our seas came out in 2004). Once the bill is enacted by Parliament it will take two years to produce a Marine Policy Statement.

Just 0.002 per cent of our coastal seas are fully protected. That the public has woken up to looming disaster is proven by the 100,000 signatures the Marine Conservation Society obtained in favour of Marine Reserves. Some people were even persuaded to participate in a Marinert publicity stunt in Brighton, posing for a nude photo in front of a sign reading: 'They are Stripping Our Seas Bare'.

'They' certainly are. The Welsh Assembly Government is more aware of the necessity for Highly Protected Areas than the UK Government. What in the UK Marine Bill are called MCZs (Marine Conservation Zones) in Wales will be primarily Highly Protected Marine Reserves. The Welsh seem completely aware of the benefits of these 'no-take' areas.

Short-term thinking has been a disaster for our seas, and the EU has not been innocent in this respect, as its quotas are all short-term. The proposal: a duty on the secretary of state to establish an ecologically coherent network of Highly Protected Marine Reserves covering at least 30 per cent of UK seas out to 200 nautical miles. This long-term investment in our marine environment was the subject of a June 18 meeting attended by OSPAR Commission officials, MPs, the Crown Estate, 10 conservation societies, commercial interests, the chairman of the UK faculty of the Prince of Wales Business and Environment Programme, and others. Dr Callum Roberts and Sir John Lawton of the Royal Commission on Environmental Pollution spoke passionately and convincingly in favour of this proposal. They also urged imperative and urgent action. Resuscitation of our seas is too important for anything less. **E**

Haris Livas-Dawes is a well-known environmentalist whose career has spanned international relations, media and academia. She is currently involved in lobbying for a strong Marine Bill

TECH RECKONING

Mapping macrobes

Mapmaking and conquest has a disturbingly close history. As indigenous people learned, the innocuous mapmaker may be followed by weapons, property claims and exploitation. So too for the recent rash of science projects using mapping. The mapping of the human genome was accompanied by a massive patent grab on human genes. By mapping online social networks, internet marketers exploit new markets, while Big Pharma waits hungrily for new maps of the brain to offer opportunities to sell mood, attention, sleep and memory drugs.

The Human Microbiome Project is a \$115 million attempt to map genetically all the microbes (bacteria, yeast and other single-celled critters) that inhabit the human body. Initial studies suggest our skin is crawling with a trillion microbes. Our mouths sustain 700 different microspecies, 10 billion in every gob of spit. The human gut harbours 100 trillion micro-organisms. Microbes outnumber the cells of the body 10 to one.

What interests microbial mapmakers is that our resident microbes (our so-called 'microbiome') are not getting a free ride. The body employs microbes to break down food, ward off invaders and boost immunity. Researchers estimate 10 per cent of all the body's chemicals are produced by microbes. Over history, microbes have swapped genes with the body and become inheritable



mitochondria in its cells. Most worrying are suggestions that our microbial passengers help control our behaviour. One tiny parasite, *Toxoplasma gondii*, secretes chemicals that make mice fatally attracted to cats. It is controversially suggested the same bug also brings on human behaviour patterns such as promiscuity and violence.

Waiting in the wings are a handful of business plans to exploit knowledge of the human microbiome, from the probiotic yoghurt industry to biotech companies like Florida-based Oragenics, which is going through FDA approval for genetically engineered bacteria it claims will out-compete the species that cause tooth decay. It calls this approach 'replacement therapy' – replacing an existing microbiome with a new engineered one. Leading researchers in the human microbiome project have filed a patent on a method they claim could make fat people skinny (or vice versa) by replacing the energy-efficient microbes resident in obese people with the more sluggish microbes found in leaner folks.

Most significant is the emerging evidence that everyone has a different set of microbes – a microbiomic fingerprint. Pharmaceutical companies and food companies would like to sell you drugs and foods perfectly matched to your own personal bacteria. Forensics experts would like to find out where you have been and with whom by examining the microbes you breathed in or left behind.

Most intriguing, because microbial populations in the air may differ by geographical location, a breath sample may reveal whether you have been taking the mountain air in Northern California or Northern Afghanistan. Instead, mapping and controlling microbes may become interchangeable with tools mapping and controlling human populations. **E**

Jim Thomas is a research programme manager and writer with ETC group (www.etcgroup.org)

“A breath sample may reveal whether you have been taking the mountain air in Northern California or Northern Afghanistan”



BEHIND THE LABEL:

Soya

Marketed as a superfood with almost magical properties, soya protein is found in almost everything we eat. It's a shame its health claims aren't worth a bean, says **Pat Thomas**

Within a very short time frame – a decade or two – soya has infiltrated our daily diets to a spectacular degree. Believe the PR spin and this simple plant-based food – which can be eaten in so many different ways – not only fights disease but also improves longevity.

In the food business there is a simple maxim that keeps us buying and eating: if a little is good for you, a lot must be really good for you. It's nonsense, of course, and in the case of soya it may even be dangerous.

Certainly, soya has some proven benefits. It contains, for instance, isoflavones, plant estrogens that in small amounts may have cancer-preventing properties. It is low in fat and is a reasonable source of protein. In the US, food labels are allowed to claim that soya is 'heart-healthy'.

Soya also has the benefit of Eastern mystique. Health claims for soya, for instance, are often based on the fact that Oriental peoples have

eaten it for a millennium and have lower rates of cancers of the breast, ovary and testicles than we do in the West. All true, but equally such claims ignore the fact that the Japanese, and Asians in general, have much higher rates of other types of cancer, particularly cancer of the oesophagus, stomach, liver and pancreas.

Likewise, we in the West eat soya in quantities and ways that are simply not healthy.

Soybeans, as found in nature, are not suitable for human consumption. Only after fermentation for some time, or extensive processing, including chemical extractions and high temperatures, are the beans – or the soya protein isolate – suitable for digestion. A diet high in soya is a diet high in plant estrogens. Research studies in both humans and animals have found that isoflavones in soya can have a profound effect, raising levels of oestrogen significantly. Proponents claim plant estrogens are 'safer' because they are natural, but this is simply not true. High levels of circulating oestrogen are a

GM contamination

A very large percentage of soya – more than 90 per cent – is genetically modified, and soya also has one of the highest percentages of contamination by pesticides of any of the foods we eat.

The usual recommendation is to eat organic soya to avoid GM contamination. Apart from the fact that organic soya doesn't do much to help avoid rainforest destruction, the bad news is that GM soya has been found in a range of food items labelled 'organic' or 'GM-free'.

A 2004 study at the University of Glamorgan, published in the *British Food Journal*, found that one-fifth of soya-based products on sale at health food shops and supermarkets contained as much as 0.7 per cent GM material. The products included vegetarian burgers, cheese substitutes, soya milk, vegetarian sausage mix, soya beans and soya flour. Although companies have to declare GM contents only over 0.9 per cent, it is well known that the Soil Association standard for organic products is 0.1 per cent.

cancer risk – whatever the source.

It might be worth the risk if soya had an unquestionable record of health benefits, but here too the data is lacking.

In August 2005, a report for the Agency for Healthcare Research and Quality, at the US Department of Health and Human Services, reviewed data from 200 studies into the relationship between soya consumption and a number of health outcomes. A wide variety of soya products was studied, including foods such as soybeans, soya flour, soya milk, tofu, miso, tempeh, natto and okara, isolated and textured soya protein that is added to foods, and soya-derived isoflavone supplements.

When it came to improving blood pressure

'Only after extensive processing are soya beans – or soya protein – suitable for digestion'

and levels of high-density lipoprotein (HDL, known as 'good' cholesterol), soya consumption did not produce any significant effects.

For menopause-related symptoms there was a net reduction in hot-flush frequency ranging from 7 per cent to 40 per cent. However, the review noted that the trials were mostly poor quality, which made definitive conclusions difficult. No other menopausal symptoms were studied.

The review also found insufficient data to suggest that soya had an effect on bone health, cancer, kidney disease, endocrine function, reproductive health, neurocognitive function or glucose metabolism. Aside from minor gastrointestinal problems reported in some short-term studies, consumption of soya products by study participants was not associated with adverse events, though the reviewers noted long-term safety data were lacking.

Soya proponents often argue studies that do show adverse effect use high doses of soya that are not relevant to real-world conditions, but how would they know? Some form of soya, usually the protein isolate, is in 60 per cent of all processed food, which means most of us eat soya, without thinking and without knowing, every single day.

Soya flour is used in bread; soya oil is in margarine and is the main component of the ubiquitous 'vegetable oil' found in a variety of food products. If you eat conventionally reared meat you are eating soya-fed animals. Soybean concentrate is used to bind foods together and boost protein content, and soya lecithin, the emulsifier E322, is one of the most widely used food additives. It is found in health drinks, ice creams, yoghurts, meat substitutes, sweets, infant formula, bakery goods, breakfast cereals, drinks, margarine, pasta and processed meats.

Soya-based infant formula milk is widely available, often on the same shelves as varieties based on cow's milk, and is currently given to around 3 per cent of infants in the UK. This soya milk still contains isoflavone, exposure to which may impact on future fertility and reproductive development. The Government advises parents not to use soya-based formula without medical supervision, yet there is nothing to prevent parents using soya formula; neither are there any warnings on the packs.

In 1998, in the *American Journal of Clinical Nutrition*, investigators reported that circulating concentrations of isoflavones in infants fed soya-based baby formula were

13,000 to 22,000 times higher than plasma oestradiol (naturally produced oestrogen) concentrations in infants fed baby formula made with cow's milk.

Most recently, a study at the Harvard School of Public Health, in Boston, found that men who regularly ate soya had significantly lower sperm counts.

Our enthusiasm for all things soya also means we ignore the fact that all soya is not created equal. Traditional fermentation of soybeans significantly reduces some of its harmful properties (see box, below). As a result, soya products such as tempeh and miso can be beneficial if eaten in moderation, but non-fermented soya products such as tofu and

soya milk may be less beneficial.

Finally, soya is an environmental concern. Huge tracts of rainforest are being cut down to feed our greed for this 'healthy' food, and to improve yields farmers are encouraged to grow genetically modified varieties, which require even more pesticides (see box, left).

It seems heresy in a world drowning in soya, but it is possible to have a healthy diet and never eat soya at all. Given the way we have allowed it to infiltrate the food system, though, it would now take a monumental effort to exclude it entirely from your diet – a situation that makes a mockery of the notion of informed consumer choice. **E**

What's wrong with soya?

- **Allergens** Soya allergies are on the rise as soya consumption goes up. These days, allergies to soya proteins – the symptoms of which include rashes, diarrhoea, vomiting, stomach cramps and breathing difficulties – are almost as common as those to milk.

- **Phytates** These substances can block the uptake of essential minerals – such as calcium, magnesium, iron and especially zinc – in the intestinal tract. All beans contain phytic acid, but soybeans have higher levels than any other. Oriental children who do not consume fish or meat products to counterbalance the effect of their high-phytate, soya- and rice-based diets have been shown to suffer nutritional deficiency illnesses, stunting, rickets and other developmental problems.

- **Enzyme inhibitors** Soya contains potent enzyme inhibitors, which block the action of trypsin and other enzymes needed for protein digestion. Normal cooking does not deactivate these substances, which can also cause serious gastric distress and reduced protein digestion, and can lead to chronic deficiencies in the uptake of essential amino acids such as methionine and leucine, as well as isoleucine and valine. These are all needed to combat stress, avoid depression, synthesise new body protein and maintain a healthy immune system.

- **Hemagglutinin** Soya products also contain another chemical, hemagglutinin, which promotes clumping of red blood cells. These clumped red cells are unable fully to take up oxygen and carry it, via the

bloodstream, to the body's tissues and organs. Hemagglutinin has also been observed to act as a growth depressant. Although the process of fermenting soybeans does deactivate hemagglutinin, cooking and precipitation do not.

- **Phytoestrogens** Soya contains high levels of oestrogen mimics known as isoflavones, which can disrupt hormone function in both men and women. High levels of circulating oestrogens are a risk for certain types of oestrogen-dependent cancers, for instance of the breast, ovaries and testicles. Animal studies have linked high consumption of isoflavones with infertility and reduce immunity.

- **Antithyroid agents** The plant oestrogens in soya can also cause an underactive thyroid and are implicated in thyroid cancer. In infants, consumption of soya formula has been linked to autoimmune thyroid disease.

- **Aluminium** To manufacture soya protein isolate – the high-protein derivative of soya that is used in snacks, infant formulas, protein bars, breakfast cereals, baked goods, ice creams and yoghurts – soybeans are first mixed with an alkaline solution to remove fibre, then precipitated and separated using an acid wash and, finally, neutralised in an alkaline solution. Acid washing in aluminium tanks leaches high levels of aluminium into the final product. As a result, soya-based formula can contain around 1,000 per cent more aluminium than is found in conventional milk-based formulas.



Pictured: The Giri Raja is southern India's 'miracle fowl'.

Opposite: The 3.5kg bird is a hardy survivor, a good layer and a plump, protein-packed dinner

ECOLOGIST
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The Forest King

It was bred to aid the rural poor, but one bird is also helping break industrialised farming's stranglehold on India. **Andrew Wasley** meets the remarkable Giri Raja

To the casual passer-by, the sleepy ambience of Bangalore's University of Agricultural Sciences seems an unlikely place for a revolution.

But pioneering academics from the university's Department of Poultry Science have placed themselves at the centre of India's growing resistance to intensive farming and corporate control of the food chain.

Scientists at the institution have developed a unique strain of poultry they claim offers hope to the country's heavily impoverished rural communities, and directly challenges those advocating industrial livestock production, which has swept across the sub-continent in recent years.

Bred to require little paid-for feed or medication, the Giri Raja – or Forest King – chicken is based on an ancient breed of south-Indian fowls and is highly adapted to free-range husbandry.

A scavenger bird, sturdy and naturally resistant to many diseases, the Giri Raja does

not demand sophisticated or modernised rearing practices. Fully grown, it weighs 3-3.5kg, as opposed to the 1.3-1.5 kg of other varieties, and it also produces a high yield of eggs. Thus in addition to providing an essential source of protein from its meat, it offers an income supplement for its keepers in rural villages and indigenous communities.

Such has been the success of the Giri Raja 'miracle fowl' project that international campaigners are now hailing it as a model for sustainable development, and a weapon in the fight against the current food crisis.

The corporate fightback

The twin threats of corporate takeover and avian influenza loom, however. A signatory to the WTO, India's burgeoning poultry industry is under pressure to become more competitive on a national and international scale. Not surprisingly, a number of food corporations have already expressed interest in buying into the Giri Raja breeding programme – moves so far thwarted by the university, which wants the breeding programme to remain independent and the birds in the hands of rural people.

Earlier this year, millions of poultry birds were controversially slaughtered in India

following fresh outbreaks of the deadly H5N1 virus. Pressure groups say it is small backyard poultry farmers – often reliant on chickens for essential food and income – who are wrongfully blamed for outbreaks and who bear the brunt of such culls, as they cannot afford to replenish liquidated bird stocks.

'[Giri Raja] is truly the king of the forest,' Dr S Abdul Rahman, secretary of the Commonwealth Veterinary Association, told the *Ecologist*. 'It's king in all aspects because it helps the farmer, it's environmentally friendly, it's organic and it's an answer to the farmers' problems. Over the past 40 years, industrialised farming has taken over the livestock sector in India, replacing backyard poultry farming, [but] the increasing monopoly [of poultry production] has left many farmers high and dry.'

Dr Narasimhamurthy, head of Bangalore University's Poultry Science Department, adds: 'Today's system of [vertical] integration [in the poultry industry] has made it difficult for marginal farmers to raise birds [economically] and to their taste, but Giri Raja has the capacity to scavenge and thrive and does not cost farmers any initial investment.

'[It has] helped the farmers in income generation and in their social activity, and also

'The university wants the breeding programme to remain independent, in the hands of rural people'

with food security. It has increased their protein consumption through eggs, both children and adults. This way it has had an all-round effect on the rural poultry families.'

Across India, small-scale backyard poultry farming has been practised for generations, playing a vital role in sustaining poor, rural communities, providing employment and income opportunities, particularly for often marginalised women and young people.

In recent decades, however, the Indian countryside has become increasingly littered with factory farms and processing facilities, using highly mechanised production processes to churn out thousands of birds a day – a picture being played out across southern Asia.

By consolidating their grip on the entire poultry chain from rearing to slaughter, the large integrated poultry companies – often financed, in part, by foreign capital – have been able to undercut small-scale producers and effectively take over the market.

Many traditional poultry farmers have faced a stark choice: to pack up and seek alternative employment or become 'contracted' to one of these integrated poultry firms. Although the system of contract farming is supposed to guarantee producers a decent price for their produce – in return for standardised stock, feed and other start-up materials from their employer company – research shows contract farmers are often crippled by low incomes and long working hours, and are frequently unable to repay their 'debt' to their employer company.

The misery and deprivation that has come to characterise much contract poultry farming inevitably results in disputes, yet there is virtually no independent mechanism for resolving them, meaning many farmers are trapped in a relentless cycle of poultry production with little financial or other reward.

As well as the arrival of industrial farming, some of the strains of poultry traditionally kept by rural communities were found to be vulnerable to disease, difficult to breed, and frequently supplied low yields of eggs or poor volumes of meat. It was in response to these challenges that experts from Bangalore University set out to develop Giri Raja.

The chicken that laid the golden egg

The university now supplies breeding birds to hundreds of people living in the countryside near to Bangalore, and offers ongoing advice and support with husbandry techniques. Others travel as far as 500km to collect Giri Raja birds – one farmer from Honnavar told

the *Ecologist* he was collecting 1,400 birds for more than 200 people as part of a trust scheme. Local farmers speak of Giri Raja transforming their lives; of how they now have staple food supplies, the means of generating some income and an increasing sense of empowerment.

When the *Ecologist* visited, stocks of Giri Raja had run low and university officials were turning customers away. It is this success that has attracted global interest from campaigners.

John Callaghan, of UK-based NGO Compassion in World Farming (www.ciwf.org), said: 'This is a great example of a local breed with local strengths being adapted to that environment, raised and improved to provide good-quality, local food for local people.'

'I'm not surprised when developing countries have the solution to their future – they've had it for a long time. There is huge knowledge contained among people living in rural locations around the world. They, after all, have developed and worked with breeds of animals that survive in those conditions.'

Compassion in World Farming believes that combining such local knowledge with international expertise in sustainable farming methods can provide food security and avoid intensive farming systems that are detrimental to people, environment and animal welfare.

Indeed, conditions at some intensive poultry farms in India have been found to be



Now watch the film...

As part of our continuing series of special reports from around the world, the *Ecologist* Film Unit visits southern India to find out more about the remarkable

Giri Raja chickens and their role in combating

food shortages. To learn more, log on to www.theecologist.org/ETV



'appalling'. Footage obtained by activists at a number of locations in West Bengal shows what campaigners say are 'crowded, filthy and unhygienic conditions' – a scenario common to industrial poultry farming around the globe.

It is claimed antibiotics are 'routinely fed' to healthy poultry to make them gain weight faster and to compensate for unsanitary living conditions, and that chickens are forced to reach their slaughter weight in just 40 days, which means that their legs, heart and lungs cannot keep pace with their rapidly growing body weight. Leg problems are so severe some are unable to reach food and water, say campaigners. During transportation to slaughter – which involves long rides in all weathers – broken bones commonly occur.

At abattoirs, chickens are shackled and hung by their feet from conveyors in mechanised slaughterhouses. Many are often dumped into scalding-hot de-feathering tanks while still conscious. Activists say there is a link between intensive poultry farming methods – and poor husbandry at large-scale farms – and the spread of avian influenza.


After outbreaks of the H5N1 form of the virus earlier this year, the authorities embarked on the slaughter of millions of poultry birds. Small-scale backyard producers have repeatedly been cited as a major vector in the origin and spread of H5N1 whilst the role of intensive factory farms is often downplayed, despite significant evidence linking 'closed' industrial scale poultry production to the spread of animal diseases.

After the slaughter, a blanket ban on small-scale production was imposed in some regions. Campaigners say the authorities and agribusiness used the pandemic's arrival as a pretext to undermine the rights of traditional farmers and bolster the industrial sector.

Although outbreaks have so far been reported in only a handful of states, including West Bengal, the emergence of avian flu in the south could spell disaster for the Bangalore University programme, the Giri Raja birds and the hundreds of communities reliant on them.

For now, however, these remarkable chickens – and those credited with their development – continue to offer hope to India's poorest communities, and to those searching for genuinely sustainable solutions to the growing international food crisis. **E**

Andrew Wasley is a journalist and producer with investigative agency Ecostorm (www.eco-storm.com)



Olive oil

Drizzle

Pictured: Olive groves stretching across Andalusia

with care

With vast areas decimated by industrial farming, the salad days are over for mass-produced olive oil.

Laura Sevier looks at the effect its rise in popularity has had on the European landscape, and at some more sustainable brands

There was once a time, back in 1970s Britain, when the only way to get hold of olive oil was to go to a chemist. Sold in glass medicinal bottles, it was recommended for cleaning out ears. How times have changed. Now we've become a nation of drizzlers, and most of us have olive oil in the kitchen because of its special flavour, versatility and widely publicised health benefits. TV chefs use it incessantly and encourage us to do the same.

Olive oil has joined the ranks of tomato ketchup, mayonnaise and marmalade to become a national staple. Demand has soared. Between 2000 and 2005, UK sales increased by 39 per cent, according to market analysts Mintel, while 2006 became the first year in which the amount of money spent on olive oil exceeded that spent on vegetable, sunflower and all other types of cooking oils. Globally, demand is growing at six per cent per year. To meet this new appetite, mass-market brands are produced intensively, so supermarkets can sell it in high volumes at lower prices (500ml of 'own-brand' olive oil sells for under £2.50).

While we may be benefiting from more and cheaper olive oil in our diets, however, there is a price to pay. Growing olives on an industrial scale is an environmental hazard (with negative impacts on the soil, water supply and wildlife), and when it comes to health benefits, not all olive oils are equal. So whether you plan to drizzle, fry, roast or bake with it, read on to find out how to pick your oil carefully. ➤

Olive oil



The rise of industrial olives

Read the label of most bottles of olive oil and the chances are the olives it

came from were grown in the EU. Olives are one of the EU's most abundant crops: the sector comprises 2.5 million producers – roughly a third of all EU farmers. Italy, Spain, Portugal and Greece are the largest producers; they dominate the global olive market, producing 80 per cent of the world's olive oil. Two Spanish provinces alone, Jaen and Cordoba, account for 40 per cent of total world production.

But not all olives are grown in the same way. Industrial olive farms grow their olive trees, planted at high densities, in massive irrigated orchards on lowland plains. The olives are harvested by machines that clamp around the tree's trunk and shake it until the olives fall to the ground. Oil is then extracted by industrial-scale centrifuge, often at high temperatures. In contrast, small, traditional farms are often ancient, their trees typically planted on upland terraces. The farmers manage their groves with few or no agrochemicals, less water and less machinery. Olives are picked off the ground by hand and the oil extracted by grinding the olives in a millstone and press. Demand for cheap, mass-produced oil is making it a struggle for the smaller, traditional farms to be economically viable, however.

Although the olive farmers have for decades been allocated generous subsidies under the auspices of the Common Agricultural Policy (CAP) – the budget for 2008 stands at €2.2 billion – these are weighted against traditional farming systems. CAP production subsidies (in effect until 2007 – see 'The wrong road', page 27) meant that the amount of money farmers received was in direct proportion to their annual output of olives and oil – so the majority of subsidies went towards the more intensive plantations. As a result, the CAP era has seen a rapid industrialisation of olive farming.



Soil erosion, desertification and pollution

Intensive olive farming is a major cause of one

of the biggest environmental problems affecting the EU: widespread soil erosion and desertification in Spain, Greece, Italy and Portugal. In 2001, the European Commission ordered an independent study into the environmental impact of olive farming across the EU. The report concluded: 'Soil erosion is probably the most serious environmental problem associated with olive farming. Inappropriate weed-control and soil-management practices, combined with the inherently high risk of erosion in many olive-farming areas, is leading to desertification on a wide scale in some of the main producing regions, as well as considerable run-off of soils and agrochemicals into water bodies.'

'Anywhere in the main olive-producing areas you can see tremendous soil erosion,' says Guy Beaufoy, a consultant on agricultural and environmental policies in Europe. 'It's an environmental catastrophe.' It is starting to be tackled through cross-compliance, that is by complying with environmental legislation plus some soil protection measures – not ploughing up and down a steep slope, for example, and maintaining a proportion of ground-cover, such as grass, to protect the soil between olive rows on slopes. Policing it is a problem, though, and there is too little checking to see whether farmers are complying with the rules.

Eroded soils and farmland chemicals are among the principal pollutants of surface waters in Mediterranean regions. Cross-compliance measures aren't always effective. Ana Carricondo, agriculture and rural development specialist for SEO, the Spanish RSPB, says there are problems with nitrate levels in surface and ground waters in Andalucía. On slopes steeper than 15 per cent, where ploughing is not allowed, herbicides are also a problem. A reservoir in Cordoba had to be closed a few years ago because of illegal herbicide levels due to surrounding olive groves.



Water shortages

Compared to horticulture or arable crops, olive production does require lower

quantities of water. Irrigated olives are very efficient, but the trouble is there are hundreds of thousands of hectares of olives being irrigated – far more than lettuce or tomatoes – and that area is growing, so the magnitude of the impact is significant.

The regions affected by the expansion of irrigated olive plantations often have serious water shortage problems. For example, in Puglia (Italy), Crete and Jaen, irrigated olive plantations have continued to expand even though ground waters are already severely depleted.

Celsa Peiteado, WWF Spain's agricultural and rural development policy officer, says this is the fourth consecutive year that Spain has suffered a drought. 'WWF is very concerned about the massive transformation of the vineyards and olive groves, traditionally dry crops, into irrigated crops, as has been occurring for the last few years,' she says.

More than 80 per cent of Spain's water is



'Money from CAP goes into making boreholes. People are drilling water resources not touched for thousands of years – all for a few olives'

devoted to irrigated crops, which puts more pressure on water reserves and the aquatic ecosystem. Much of this irrigation is supplied from the 510,000 illegal wells identified in Spain by the Environmental Department.

'Water shortage is a huge issue in Spain, yet the country is expanding irrigation where it can because irrigation transforms production,' says Guy Beaufoy. 'Money from CAP goes into making boreholes and irrigation, and people are drilling water resources not touched for thousands of years – all for a few more olives. It's a huge environmental issue, far more than people in other parts of Europe realise.'



Biodiversity

Industrial olive oil production involves a dramatic change in land use, from

extensive cereal production or mixed cultivation, or even natural woodland or scrub (all with high biodiversity value), to a more intensive, irrigated and mechanised means of producing olives. This – ‘above all else’ – is the concern of WWF Spain’s Ana Carricondo:

‘Techniques that are used by intensive farms to increase production – especially frequent tillage and heavy pesticide use – result in a considerable reduction in the diversity and total numbers of flora and fauna,’ she says.

In contrast, olive groves that are managed traditionally (with ground vegetation cover, no excessive ploughing and a minimal application of herbicides and pesticides) generally have a relatively high number of animal species and a rich ground flora of herbs, flowers and grasses, all part of a mosaic of hillside habitats with a high landscape and cultural value.



The wrong road

Since the 1990s, BirdLife International and WWF have been voicing concern over the environmentally

damaging trends in European olive farming, and calling for fundamental changes to the CAP market regime governing the sector. Their joint 2001 report, ‘EU policies for olive farming – unsustainable on all counts,’ concluded that the old CAP production subsidies ‘drove the sector down the wrong road, encouraging farmers to intensify production and use more irrigation, while marginalising low-input systems.’

The more intensive plantations, the report said, are ‘among the most productive in the world and have little or no need of CAP support.’ They are also of ‘little or no nature conservation value, and create environmental problems – desertification, pollution from agrochemicals, depletion of water resources...’ It said smaller, low-input farms faced a choice between intensification or abandonment, which brings increased risk of fire and erosion.

Since 2007, as part of a fundamental reform of the CAP, olive subsidies have been incorporated into the Single Farm Payment Scheme, which means they are no longer linked to olive production per se. But, says

agricultural and environmental consultant Guy Beaufof, who specialises in the Mediterranean region, this has made no real difference. ‘There has been no fundamental shift in funding – the distribution of funds is basically the same as before. It’s just fossilising the existing pattern. An intensive, high-yield plantation can still receive 10 times more per hectare than a traditional low-intensity plantation, just as before. Marginal producers are still in the same situation.’

Olive producers receive a payment equivalent to 60 per cent of the average production-linked subsidy they received during a four-year reference period (2000 to 2003), or 100 per cent in the case of producers with less than 0.3 hectares. The remaining aid (40 per cent) has been transferred into member states’ national envelopes to grant certain producers an additional ‘olive grove payment’ (OGP). It is expected that this money will be channelled into landscape preservation and environmental, social and cultural concerns.

‘All in the all, the reform has been pretty irrelevant,’ says Beaufof. ‘The only difference is that there is no incentive to expand and

‘EU member states are using environmental schemes as hidden income support, rather than as bona fide environmental tools’

intensify, and that there has been a long-term shift into agri-environment schemes. But this shift is very small when compared with the main olive subsidies.’

While some of these agri-environment schemes – such as aids for organic farming, integrated production (with the stated aim of reduced chemical use) and maintaining vegetation cover in olive groves – are being put to good use, others are being abused.

‘In Spain, for instance, much of the agri-environment budget has been drained into dodgy “input-reduction schemes” that often deliver nothing,’ says Ariel Brunner, EU agriculture policy officer of BirdLife International. ‘In one case, among the beneficiaries in Andalucía, the use of pesticides has actually increased. It is not the case officially, but these cases are due to member states using environmental schemes as hidden income support rather than as bona fide environmental tools.’

Pictured: Abundant vegetation amid the organic Núñez de Prado groves



Olive oil



There is a better way...

Spain is the world's leading olive oil producer, its 300 million trees contributing

almost one million tonnes of oil each year to the world market. Andalucía itself accounts for 80 per cent of Spanish olive oil. It's not all herbicides, pesticides and mechanical harvesters, however; there are producers who stick to traditional methods and grow their olives organically.

'Organic production of olives can be almost as great as industrial production, if special attention is given to each stage of the process,' says Andalucían producer Paco Núñez de Prado.

'The only difference is that the organic process will have around 20 per cent higher costs.' The Núñez de Prado family has been producing olive oil on their family estate Baena region for 200 years (www.nunezdepradousa.com).

After picking, the olives are swiftly stone-crushed, using traditional mills introduced by the Romans. Stone milling ensures the olives remain cool when crushed; the oil obtained this way is low in acidity. The pulp and vegetable water are used to make biological compost. The groves aren't ploughed; instead a covering of vegetation is permanently maintained that protects the soil from the direct rays of the sun, maintains the humidity of the ground and prevents soil erosion, even during torrential downpours. The difference in the landscape is striking. The ground under the estate's trees grows a healthy, lush green, instead of the bare red earth of surrounding groves.

The groves are irrigated via an underground irrigation system – a better use of water, as less is wasted through evaporation – from a regulated reservoir that permits certain limits of water depending on the rainfall that year.

There are groves that use no irrigation at all. *Olivar de la Luna* (www.olivardelaluna.es/en), also based in Andalucía, has been producing organic olive oil since 1994. 'Non-irrigated groves result in a lower yield but a more intensely flavoured oil,' says owner Tránsito Habas Sánchez, who plans to install rainwater tanks on the roof for occasional irrigation if there is a bad drought. Intensifying production was never an option – 'we want to use resources sparingly and allow the vegetation on sections of the mountain to flourish.'



Choose carefully

The highest-quality oil has the lowest acidity levels.

- Extra Virgin (up to 1 per cent acidity) is made from

ripe, undamaged olives cold-pressed swiftly after harvesting to minimise deterioration.

Cold-pressed generally means the oil has not been subjected to temperatures above 27°C (80°F). High temperatures increase the yield but can impair the flavour and quality.

- Virgin oil (up to 8 per cent acidity) is made in the same way, but the olives are handled and pressed with less care, meaning more acidity.

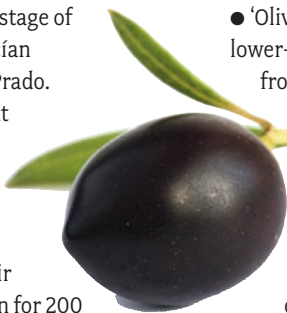
- 'Olive oil' or 'pure olive oil' is usually a mix of lower-quality refined olive oils and virgin oils from the second or third pressing. They have undergone heat treatment and/or have been chemically refined.

- Commercial extra virgin olive oil is often bought by big brands in bulk and blended to standard specifications. It's cheaper than artisan, single variety or single estate oil, but won't have the aroma, character or taste. For a good range of brands, see www.naturalgrocery.co.uk

- Labels can be misleading – 'produce of Italy' might mean 'packaged in'. Legislation allows countries to import, bottle and re-export oil without having to declare its country of origin.

- Consider buying from countries outside the EU. Try Zaytoun, a fairly traded organic olive oil from occupied Palestine. See www.zaytoun.org

- Once opened, oil will begin to deteriorate. Its enemies are heat, light, air and age, so buy your oil in dark glass bottles or metal containers, store in a cool, dark place (but not the fridge) and use within a month or two of opening.



First heat the oil?

While cold-pressed and extra virgin may be the best for health and flavour, they are not the best oils to cook

with. Unrefined oils have a lower 'smoke point', (the temperature at which oil begins to smoke) when they oxidize, become rancid and, when ingested, produce free radicals in the body, which can lead to cellular damage, premature ageing, a weakened immune system and a raised risk of cancer. Refined oils, such as extra light olive oil, have a higher smoke point, so for higher temperature cooking (barbecues, stir-fries or deep-frying at 200°C or above) they are a better option. Go for organic to ensure it hasn't been refined with chemical solvents. If cooking with virgin olive oil then normal frying temperatures of 150-175°C and cooking times of no more than five to 10 minutes are thought to be okay.



Olive oil spreads

A survey by *Which?*

found that the main ingredient in olive oil spreads is vegetable

oil. Bertolli, for instance, is made with 21 per cent olive oil (refined and virgin). Other ingredients often include refined rapeseed oil (which contains trans fats), emulsifiers, colour, preservatives, thickeners, flavouring and buttermilk powder. Butter is healthier; or just dip your bread in some virgin olive oil. The Food Standards Agency acknowledges that the effects of trans fats may be worse than those of the saturated fat in butter.



Which oils are healthiest?

Olive oil is often touted as the secret to a healthy life. Low in saturated fat,

high in heart-healthy monosaturated fat, it is rich in polyphenols, antioxidants, which may help prevent cancer, heart disease and neurodegenerative diseases – but some oils are healthier than others.

- In *Fats That Heal, Fats That Kill*, Udo Erasmus recommends that virgin oils are the ones to go for, because non-virgin oils have been refined. The high temperatures involved in refining not only destroy their nutritional and biological value, but also cause 'internal changes to take place in oil

molecules', making them toxic. Small amounts of trans fats (which raise the type of cholesterol in the blood that increases the risk of heart disease) are formed when vegetable oils are refined.

- Unless you're buying organic there is a chance the oil may be contaminated with pesticide residues. Tests have revealed low levels of organophosphate pesticides – namely dimethoate, fenthion, omethoate, chlorpyrifos, methamidophos, parathion-methyl, parathion, methidathion and malathion – in a many olive oil samples. Tests by the Government's Pesticide Residue Committee in 2005 showed six out of 43 samples contained residues of the organochlorine pesticide endosulfan.

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America is at war again. This time, the battlefield is California and the enemy is a small insect called the light-brown apple moth, or LBAM. According to California's agriculture secretary, AG Kawamura, the moth is an invasive pest newly arrived in California that threatens the state's health, environment, forests, food supplies and quality of life.

'The crisis is immediate, and this is an environmental emergency requiring quick action by the state and federal governments,' Kawamura has said. 'Left unchecked, the light-brown apple moth could cause damage [to the food supply] as high as \$640 million annually.' State assembly agriculture commissioner Tom Berryhill agrees: 'If we let this thing get into the central valley [California's main agricultural area], this is Armageddon for agriculture.'

Last year, the US Department of Agriculture (USDA) gave the State of California Department of Agriculture (CDFA) \$90 million to wipe out the moth. CDFA launched an aggressive eradication programme in Santa Cruz and Monterey counties, as well as in the San Francisco Bay area. The official state of emergency over the LBAM enabled CDFA to put the programme into operation in September 2007 without the legally required environmental impact report (EIR). Today, nine months into the programme, a battle rages in California, but it is no longer the state of California against the LBAM – it's the people against the state.

The LBAM eradication programme consisted of a raft of measures to be implemented on public and private property, designed to leave no hiding place for the moth. They included:

- spraying of the nerve toxin organophosphate chlorpyrifos at nurseries

Illustration: WWW.DANNYALLISON.CO.UK

Moth balls

Is the light brown apple moth such a danger to crops both agricultural and financial that the US government will risk the health of its citizens to eradicate it?

They spray, you pay, warns **Claire Robinson**

- spraying of the pesticides Btk and spinosad
- release of sterile moths
- release of *Trichogramma* wasps, which are a native predator.

In addition, three strands of the programme involved the release of a synthetic pheromone, brand-named Checkmate, which confuses the moth's mating behaviour. In the first, CDFA would place pheromone-releasing twist-ties in trees. In the 'SPLAT' (Specialised Pheromone and Lure Application Technology) method, the pheromone, mixed with a pesticide, would be squirted on to trees and telephone poles. Most controversially, CDFA would aerially spray the pheromone over residential areas every 30 days, to be continued for years as needed. The pheromone was enclosed in plastic time-release microcapsules that allowed it to remain biologically active for the full 30 days between applications.

The initial rounds of aerial spraying took place over Monterey and Santa Cruz counties from September to November 2007. The CDFA had told the public the pheromone was harmless, so no-one was prepared for what happened next. Hundreds of people got sick. Symptoms included respiratory difficulty, muscle aches, chest pains, palpitations, fatigue, dizziness, vomiting, swollen lymph nodes, body rashes and eye irritation. Women reported menstrual irregularities, and post-menopausal women had a return of menses. While some people recovered as the effects of the spray wore off, others did not. An 11-month-old boy went into respiratory arrest and nearly died. He is now asthmatic, in spite of the fact that he was in perfect health before the spraying and there is no family history of asthma.

The sickness of the cure

A total of 643 complaints were received from people who said they were made sick by the spray. This is believed to be a gross underestimate, as no official channel for health complaints was publicised. The figure comes from Michael Lynberg of citizens' group Helping Our Peninsula's Environment (HOPE), who stepped into the gap and became unofficial receiver of health complaints.

Problems were not limited to human health. From the day after the spraying, people reported that pets suddenly became ill or died. Hundreds of dead seabirds washed up on the shore, coated in yellow foam. One theory said that the surfactant in Checkmate (an 'inert' ingredient designed to make the spray easier to spread) had washed the natural oils out of

'The CDFA had told the public the pheromone was harmless, so no-one was prepared for what happened next. Hundreds got sick'

the birds' feathers and drowned them. The same foam was seen floating in rivers and was pumped out from under boardwalks by municipal authorities.

More was to come. Twenty days after Santa Cruz was sprayed, a massive red tide arrived. A 'red tide' is a large red or brown-coloured algal bloom in the sea. Some release toxins and are linked with deaths of sea creatures. This red tide was, according to people who had surfed there their whole lives, the biggest and dirtiest ever. 'This spray caused the red tide to get that bad, that's my belief,' said ecologist David Haisten, a surfer for 20 years.

Pesticide poisonings are common in the developing world, where poor communications, limited literacy and language barriers can mean suffering goes unnoticed by the rest of the world. This was California, however, home to Silicon Valley, the movie industry and a high proportion of educated English-speakers, many of whom were furious about what Dr Daniel Harder, director of the Arboretum at University of California, Santa Cruz, called 'a grand experiment involving 17 million people and 7,000 square miles'.

Virtually overnight, groups sprang up across the state to oppose the LBAM programme. Prominent in these groups was California's sizeable population of the chemically injured, who are well-informed about the dangers of chemical exposure. The aerial spraying of Checkmate acted as a lightning rod to enlist even those who had never been politically active. Within two months, 11,000 people had signed a petition against the spraying. By June 2008, the number topped 30,000. The father of the 11-month-old boy who was made asthmatic, US Air Force Major Tim Wilcox, was one of many residents who agreed to be filmed and have their testimony placed on the internet. So fierce was the backlash against the spraying that Foster Gamble of California Alliance to Stop the Spray (CASS) predicted, if it continued, that it would unleash the 'largest social unrest since Vietnam'.

CDFA's response was not, as some hoped, to arrange toxicity tests on Checkmate. Instead, CDFA awarded a \$497,000 no-bid contract

(subsequently cancelled) to the public relations firm Porter Novelli, to convince the public that the spray was safe.

The battle had already moved into the courts, though. In April, in a lawsuit brought by the city and county of Santa Cruz, a judge ordered CDFA to stop aerial spraying in the county until it had completed an EIR. The judge ruled there was no evidence of an emergency that would justify bypassing the EIR. One hour after the court ruling, Governor Arnold Schwarzenegger announced that aerial spraying was postponed until safety tests – for acute, not long-term effects – were completed. In May, a second court ruling banned aerial spraying in Monterey county, pending an EIR.

Local authorities joined the fight, with 29 cities and three counties passing resolutions against the aerial spraying. No fewer than five bills, variously demanding restrictions on spraying, EIRs, voter consent and disclosure of pesticide ingredients, were introduced into the legislature.

Experts investigated the components of the spray and found that the state's assertions of safety were based more on wishful thinking than on fact. Richard Philp, emeritus professor of pharmacology and toxicology at the University of Western Ontario in Canada, reviewed the available literature and could find no evidence that the pheromone in Checkmate had been tested for chronic toxicity on mammals. Nor could he find any data relating to aerial spraying of the chemical over residential areas. He concluded: 'The USDA and EPA documents I



reviewed are filled with contradictory statements regarding the toxicity testing of pheromones, inappropriate extrapolations from irrelevant toxicity studies, and are suggestive of a poor understanding of basic pharmacological and toxicological principles.'

When inert means anything but

Questions about Checkmate's safety did not end with the active ingredient, the pheromone. Much initial support for the spraying was based on claims that Checkmate consisted only of a chemical copy of a natural pheromone, plus 'inert' ingredients. Many people are unaware that the manufacturers of pesticides and other noxious chemicals do not use the word 'inert' in the everyday sense of 'having no power of action'; instead, they use it to mean that the substance is not specifically meant to perform the action for which the product was designed

– for example, to kill insects or (in this case) to disrupt mating. Frequently, inerts present their own toxicological problems.

Lawrence Rose MD, former senior public medical officer for Cal-OSHA (the State of California's division of occupational safety and health) and a faculty member of the University of California San Francisco department of occupational/environmental medicine, says the symptoms suffered by residents are 'consistent with known toxicology scientific information of the ingredients of Checkmate'. These ingredients, he adds, include irritants, sensitisers, nervous-system disrupters, endocrine disruptors, allergens and hypersensitivity inducers. As for the long-term health effects, these are 'of concern due to the known induced mutations and suspected cancer risks of constituent chemicals'.

Both Rose and a Kentfield-based physician, Dr Ann Haiden, say the small size of the microcapsules presents a hazard. Haiden says they can be inhaled into the deeper parts of the lung, where they are difficult or impossible to dislodge. As well as causing respiratory problems, such particles can trigger heart failure. Haiden is not reassured by a report by California's Office of Environmental Health Hazard Assessment and CDFA that found no definite causal link between the spraying and people's symptoms. She notes that this conclusion was not based on findings, but 'lack of useful data-gathering'. In other words, a case of don't look, don't find.

Faced with an onslaught of opposition, CDFA backed off. On 19 June, in what was greeted as a victory for millions of Californians and thousands of spray opponents, agriculture secretary Kawamura announced that the state would no longer aerially spray pheromones over urban areas to fight the LBAM. Many critics of the LBAM programme responded with caution, however, for two reasons. First, as State Assembly Member Jared Huffman says, 'the devil is in the details': a question mark lingers over which areas of California will be designated 'urban'. On a radio phone-in with Kawamura, worried callers wanted to know if their rural areas would still be sprayed.

The second reason for caution, say some

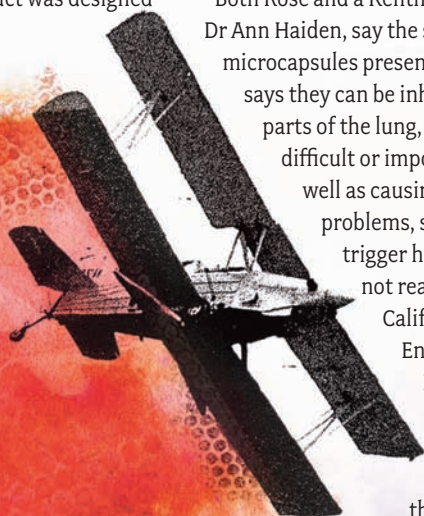
citizens' groups, is that people will be lulled into a false sense of security, and will be so grateful for the end to aerial spraying that they will passively submit to the ground-based campaign – which is equally toxic. The twist-ties and traps are pheromone-based, and have produced symptoms in exposed residents, as have BT sprays. Oakland activist Isis Feral said of the CDFA's U-turn on aerial spraying: 'This is precisely what some of us have warned would be the outcome of focusing on aerial spraying only. The state will be saturating our air supply and exposing us to the same toxic chemicals by different methods. The trapping and eradication programme should be opposed in its entirety. The apple moth is not a threat, but pesticides are.'

Feral's assertion that the LBAM is not a threat cuts through the public health and environmental arguments (serious as they are) to question the very basis of the eradication programme. She is not alone in her view. Since the launch of the programme, well-credentialed experts have challenged almost every claim that the state has made about the LBAM. Chief among them is the notion that the moth is a major threat to agriculture.

'CDFA claimed it wants to prevent "anticipated" harm from the moth – a pre-emptive approach that recalls US foreign policy'

Steven Munno is an organic farmer at the Center for Agroecology and Sustainable Food Systems at the University of California, Santa Cruz. Though the moth is on his farm, he says it has done no damage to his crops or those of other organic farmers he knows. Indeed, CDFA admitted in court that the moth has caused 'no documented crop losses in California'. It claimed it wants to prevent 'anticipated' harm from the moth – a pre-emptive approach that recalls US foreign policy over the past decade.

The LBAM, Munno says, is 'just another insect', and one that organic farmers are well-equipped to deal with. What is causing economic damage to farmers, he says, is the time they must spend dealing with the bureaucracy of the LBAM programme and examining their crops for moth larvae. This involves excessive handling, which, with a delicate crop such as strawberries, can make it unsaleable. 'It's a tremendous drain and it



STOP THE SPRAY
Air/Ground Spray Not OK

DONT
SPRAY
MY
KIDS!

Pesticide

makes some things no longer profitable,' Munno says. Some farmers have had produce quarantined, and are forbidden even from selling it locally in case it is shipped out of state. There is no compensation.

Dr Daniel Harder agrees that the moth is no cause for alarm. He travelled on a fact-finding mission to New Zealand, where the LBAM has been established for more than 100 years and is managed by Integrated Pest Management methods. He says no special measures are taken against the moth as it is controlled '80 to 90 per cent' by natural predators: birds, spiders, earwigs and beetles. The moth only became a

unnecessary and ineffective, why is it being pursued? One reason is US trade policy. Under the North American Free Trade Agreement (NAFTA), the LBAM is defined as a quarantine pest. In 2007, Canada and Mexico invoked trade quarantines against Californian produce on the basis of the simple presence of the LBAM.

Foster Gamble of CASS gives a second reason why the LBAM programme refuses to die: 'Follow the money'. Checkmate is manufactured and marketed by a company called Suterra, owned by Stewart A Resnick. Resnick is also the owner and chairman of the California-based Paramount Farming Company,

one of the biggest producers of citrus fruit and other food in the US. In the film *Illegal LBAM Spraying: Who Profits? How to Stop It?*, Gamble traces the financial links between Resnick's companies and Governor Schwarzenegger. The California Secretary of State's website reveals that Resnick and Paramount

donated over \$144,000 to Schwarzenegger's 2005-2006 campaign to become governor of California. As Schwarzenegger said during his campaign, 'I think any of those kind of real powerful special interests, if you take money from them, you owe them something'.

Quite. And how did the governor pay back his debt to Resnick? Some say, by allowing the programme to go ahead until it was challenged in court. Under the aerial spray programme, Gamble points out, Resnick would not have had to pay to spray his orchards but, through Suterra, would have made hundreds of millions of dollars from the taxpayer-funded aerial spraying. Resnick still stands to gain from any ground-based measures that use Suterra's products, but if the LBAM programme is withdrawn and the moth remains a quarantine pest, Paramount's export trade will suffer.

A way out of the clouds

There is a way out of the quarantine problem. The quarantine demand from Mexico specifies that its terms can change in the light of 'more

technical and scientific information' on the LBAM. Larry Bragman, a member of the town council of Fairfax, says Harder and Carey's reports constitute such information and should be used to reclassify LBAM as a non-quarantine pest, as it is in the EU.

The third and most important reason for the survival of the LBAM programme is that it is, in the words of Maxina Ventura of DontSprayCalifornia.org, a gravy train. Ventura says residents need to understand that the LBAM programme is just one in a long line of similar programmes stirring up alarm over the latest 'pest of the month'. The LBAM programme was piggy-backed in on the glassy-winged sharpshooter (a leafhopper insect) programme, and will be followed, Ventura predicts, by a gypsy moth programme.

Like the orchestrated perpetual war of George Orwell's novel *1984*, these programmes can continue indefinitely, soaking up vast amounts of taxpayer money. The dollars flow from the federal government to the state and thence to the counties, which, says Ventura, get shiny new trucks and guaranteed extra staffing for about a decade per programme.

The programmes are designed in consultation with invasive species and exotic pests councils. These councils have ballooned over the past decade and are dominated by pesticide industry representatives, always ready with a chemical solution to the 'problem' they have helped identify (an argument made by biologist David Theodoropoulos in his 2003 book *Invasion Biology: Critique of a Pseudoscience*). What's more, the money allocated to the counties is ringfenced for pesticides; it cannot, for example, be spent on educating farmers or the public about non-toxic pest management. Ventura points out that unless the LBAM programme is opposed in its entirety, another one like it will be along soon, with people and the environment the losers.

Foster Gamble would like to see a 'win-win' outcome that would benefit everyone: the money allocated to schemes such as the LBAM programme should be redirected to help farmers implement sustainable pest management methods like those already in place on many organic farms. For that to happen, politicians will have to cut the umbilical cord connecting them to the pesticide industry. Some would say it's high time. **E**

Clare Robinson is a freelance writer and an editor with GM Watch (www.gmwatch.org)



Pictured: Locals protest against LBAM spraying

problem in the 1980s, when organophosphate pesticides wiped out predators and LBAM numbers spiked. When organophosphates were abolished due to health concerns, the beneficial insects came back and the LBAM ceased to be a problem. Harder says predators of LBAM also live in California and should be allowed to do their work.

Another high-profile critic of the LBAM programme is Dr James Carey, professor of entomology at the University of California, Davis, and a specialist in invasive pests. Carey takes issue with the CDFA's claim that the LBAM is a new arrival in the state – he thinks it has been there for 30 to 50 years. He and fellow UC Davis entomologists Frank Zalom and Bruce Hammock co-wrote a letter to the USDA, saying there is no evidence that the LBAM will be more economically damaging than its many relatives in California. What is more, they say the programme will not work.

'I seriously doubt there's any entomologist in the country who believes that eradicating this pest is possible at this stage,' Carey says.

Given the evidence that the LBAM eradication programme is expensive, unsafe, unhealthy, economically damaging,

Further information

- www.dontspraycalifornia.org
- www.LBAMspray.com
- www.veganreader.com

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TREE THIEVES

The environmental disaster that put paid to China's intensive logging spawned an illegal trade in timber that risks global erosion. In their rush to feed the dragon, loggers on both sides of the law can't see the trees for the wood, says **Steve Kemper**

Ten years ago, Suifenhe and Manzhouli were small, little-known towns on China's remote northern border with Russia. They are now booming centres of chaotic and often illegal commerce. Their growth has been fuelled by timber. The vast forests of the Russian Far East – after Amazonia the world's second-largest carbon sink – are draining through border towns such as these at an alarming rate, often with help from the Russian mafia, Chinese criminal gangs and corrupt officials on both sides of the border.

The raw logs get sawn into boards before being transported further along the timber chain in China, where thousands of factories churn out wood products that end up in homes in the United States, Europe and Japan.

Suifenhe and Manzhouli are still unknown to most Westerners, but they are no longer inconsequential. Nor are they uncommon. Huge quantities of wood, much of it illegally cut, reach China every day from timber depots in Indonesia, Malaysia, the Mekong Delta, central Africa and Amazonia. These places are feeding China's voracious appetite for wood, which is continuously stoked in turn by global demand for inexpensive furniture, flooring and

other wood products. This cut-and-consume cycle is destroying the world's forests with breathtaking speed and on a scale never before seen.

'China is becoming a black hole for tropical timber around the world,' says William Laurance, a senior research scientist at the Smithsonian Tropical Research Institute in Panama. 'Basically, half of all timber being traded in the world is going to China. Half. That's an incredible figure. China has completely altered the tropical timber trade.'

It has happened quickly. A decade ago, China was a blip in the global wood industry. It imported few logs and exported relatively few wooden products. Domestic forests supplied the country's modest needs. A perfect storm of developments changed all that. In 1998, the Yangtze River flooded catastrophically, killing several thousand people and leaving millions homeless. The main cause was erosion brought about by deforestation – common throughout China. The government responded by banning logging in the country's few remaining natural forests. At the same time, the Chinese economy had begun to surge, which intensified demand for wood needed for construction, paper and other products. This spurred the country's

wood-manufacturing sector, the expansion of which required a constant supply of two things: logs and new markets. For both, China looked abroad.

Asian and Pacific countries, including the Russian Far East, supply approximately 70 per cent of the wood entering China. In the past decade, the forests in many of these places have been plundered on an immense scale. William Laurance found that half of all Asian nations have lost more than 70 per cent of their forests, with Indonesia and Malaysia especially hard-hit. According to a 2006 report by Forest Trends: 'If current cutting rates continue, the economically accessible mature natural forests in Papua New Guinea will be gone in 16 years or less. The equivalent figure for Indonesia is 10 years. The situation in Myanmar is no better, and may be even worse, and the Philippines and Thailand have already logged out most of their natural forests.'

If the logging in Russia's eastern forests continues at the present rate, these forests too will be 'logged out' – so heavily cut commercial logging is no longer worthwhile – in 20 years.

Much of this wood ends up in China, and much of it is cut illegally – 90 per cent in Papua New Guinea, according to Forest



For Sale

Trends; 95 per cent in Myanmar, according to Global Witness, which monitors the links between corruption, environmental abuses and human rights; up to 70 per cent in Russia and Malaysia. Indonesia's minister of the environment estimates that 73 per cent of the wood leaving his country is illegal and says that 37 of the country's 41 national parks are being pillaged by loggers.

As the Asian forests have thinned out, China and its Asian suppliers have turned their attention to new sources in central Africa and South America, with similar results.

According to a 2006 World Bank report: 'It is feared that the Chinese demand, which does not currently distinguish between legally and illegally produced timber for imports, is escalating the problem of illegal logging.'

A 2008 report for WWF by Constance McDermott, programme director of the Yale Program on Forest Policy and Governance and on Forest Certification at the Yale School of Forest and Environmental Studies (F&ES), and Lloyd Irland, lecturer and senior research scientist at F&ES, concurs: 'It is likely that a significant portion of the wood products imported into China comes from logging practices that destroy and/or degrade high-conservation value forests, and/or are otherwise unsustainable or illegal.'

About 70 per cent of that imported wood leaves China as inexpensive wood products. Many of these products end up in the living rooms of consumers who are unaware that they are bankrolling a criminal enterprise with far-reaching consequences.

Paying the price

The costs of China's timber trade are immense. The first casualties are the local people, who often get swindled by loggers. A December 2007 report by independent campaigning organisation the Environmental Investigation Agency (EIA) recounts that on the Indonesian island of Salawati, a logging company paid villagers \$22,000 for hardwood worth \$3 million. In Africa, Greenpeace found contracts in which communities signed away logging rights worth hundreds of thousands of dollars for less than \$100 worth of salt, sugar and beer.

If the local people object, police or military often step in to intimidate or coerce villagers. In Myanmar, military officials have obliged their Chinese partners by expelling villagers from forests. In the Democratic Republic of Congo, soldiers have used violence against logging protesters. Last year, a Penan chief in

Borneo who opposed logging was killed.

In many poor countries, the property rights of local communities are tenuous or unrecognised, a flaw exploited by logging companies and governments. 'In Cambodia, Laos and also China, there is something harsh going on called economic land concessions,' says Kerstin Canby, director of the forest trade and finance programme at Forest Trends. 'The land is technically the government's, but people are living on it, so when the government sells or gives away this land for a plantation or an agribusiness, it causes human rights issues.'

According to the World Bank, more than a billion poor people depend on forests for subsistence. When those forests disappear,

'The loggers leave a trail of destruction beyond the cutting. They kill animals for food and denude riverbanks, which leads to erosion'

local people lose their principal resource and their livelihood. Mark Ashton, Morris K. Jesup professor of silviculture and forest ecology at F&ES, has travelled and worked in many of the areas affected by rampant logging and has seen the social consequences. 'The original communities are completely destabilised,' he says. 'Their standard of living quickly lowers from subsistence to poverty.'

Nor do the national governments see much economic benefit. Most of the profits are pocketed by a few logging companies and corrupt officials; the rest leaves the country with the logs. The companies often pay bribes, but not taxes, royalties or customs fees. A World Bank study estimated that illegal logging on public lands alone costs poor governments

\$15 billion a year. Indonesia estimates outlaw loggers cheat it of \$4 billion a year. An EIA investigation exposed one Indonesian smuggling racket that transported rare merbau logs worth \$1 billion a year from Papua to China (see also box on page 40).

By avoiding expenses, outlaw companies also warp the price of wood. According to a 2004 report by the American Forest & Paper Association, illegal logging costs the US timber industry \$1 billion a year in lost exports and cut-rate prices.

'If you take wood and you don't pay the landowner, and if it's public land you don't pay the nation, then export that wood and sell it, you're lowering the price, because there is always a cost in sustainability,' says Ashton, also director of F&ES school forests. 'If you're trying to take wood in a sustainable way, you also have to do it in such a way that you do least harm to the land. That also costs money. So illegal logging affects sustainable forestry in a huge way. We're having a hard time sustainably managing the Yale Forests because of depressed timber values due to illegal logging in Siberia, Asia and Latin America – and the raw logs go directly to these big industries in China.'

The loggers leave a trail of destruction beyond the cutting. They kill animals for food, pollute water and denude riverbanks, which leads to erosion, flooding and landslides. They leave behind slash that contributes to forest fires. They destroy habitat, pushing threatened and endangered animals to the brink, including Siberian tigers, Amur leopards, red pandas, Sumatran tigers and elephants, bonobos and orang-utans. Loggers often build access roads, which encourages incursion by small farmers or industrial loggers and agribusiness.

And, of course, the massive loss of trees worsens climate change. According to the 2006 Stern Review, deforestation is



responsible for nearly 20 per cent of global carbon emissions – making it worse for the planet than emissions from transportation or industrial manufacturing.

Kerstin Canby, who worked on African logging issues for the World Bank before joining Forest Trends, also sees Africa as an important testing ground. ‘The World Bank is probably scared to death that all its lending will be undermined by Chinese financing,’ she says. ‘For the World Bank to survive in Africa, it has to get China to come in line with its donors’ way of thinking about corporate social responsibility and environmental impact assessments. If the World Bank can convince China then there’s hope. China is proud that it provides support without conditions.’

Some of the countries being plundered – including Indonesia, Cambodia, Laos and Vietnam – have passed bans against the export of certain timber, but laws are toothless unless enforced, and the forests in all these places continue to fall, mostly toward China.

The industrial countries also have taken steps. The G8 countries developed an ‘action programme’ on illegal logging that encourages countries to develop better governance. Some 100 countries have signed up to the Forest Law Enforcement and Governance (FLEG) ministerial process, which calls for various actions to fight illegal logging, including bilateral agreements about procurement policies and wood sourcing.

Logging sans frontières

In 2006, President Vladimir Putin, exasperated by what he called the embezzlement of Russia’s Far Eastern forests, created a plan to prevent illegal logging. Thus far its only effect has been to confuse the forestry authorities, says Constance McDermott, who visited the Russian-Chinese border last October. ‘It’s not clear what the new law even is,’ she says, ‘or

Logged East, bought West

A few statistics capture China’s recent impact on the world’s forests and timber industry, as well as the Western consumerism that has subsidised it:

- Between 1997 and 2007, the volume of wood imported by China tripled. The country is now the world’s biggest importer of raw forest products (logs and sawn timber). Nor is China’s appetite for wood likely to diminish anytime soon: a 2006 report by Forest Trends, a group based in Washington, DC that monitors the timber trade, predicts that China’s forest imports will double within a decade.

- By 2005, China had become the world’s largest exporter of wood products, valued at more than \$17 billion. China’s biggest customer: the United States, which bought approximately \$7.9 billion worth in 2005.

- China now makes about a third of the world’s furniture. Between 2000 and 2006, its exports of furniture rose from 91 million pieces to 248 million pieces. The largest portion – about 40 per cent – went to the United States.

- China has become the world’s second-largest producer of paper and paperboard, and the biggest producer of plywood and veneers made from tropical hardwoods.

- Between 1997 and 2005, imports of wood products from China to the United States and the European Union rose by more than 700 per cent.

who’s in charge or where revenue goes.’

The situation on the border also demonstrates the difficulties inherent in another possible solution to illegal logging: certified wood. This ‘green’ label is supposed to guarantee that a log has been validated as legal all along the timber chain, from the forest to its final incarnation as furniture, flooring or paper. McDermott says that’s an impossible goal in the timber depots along the Russian-Chinese border.

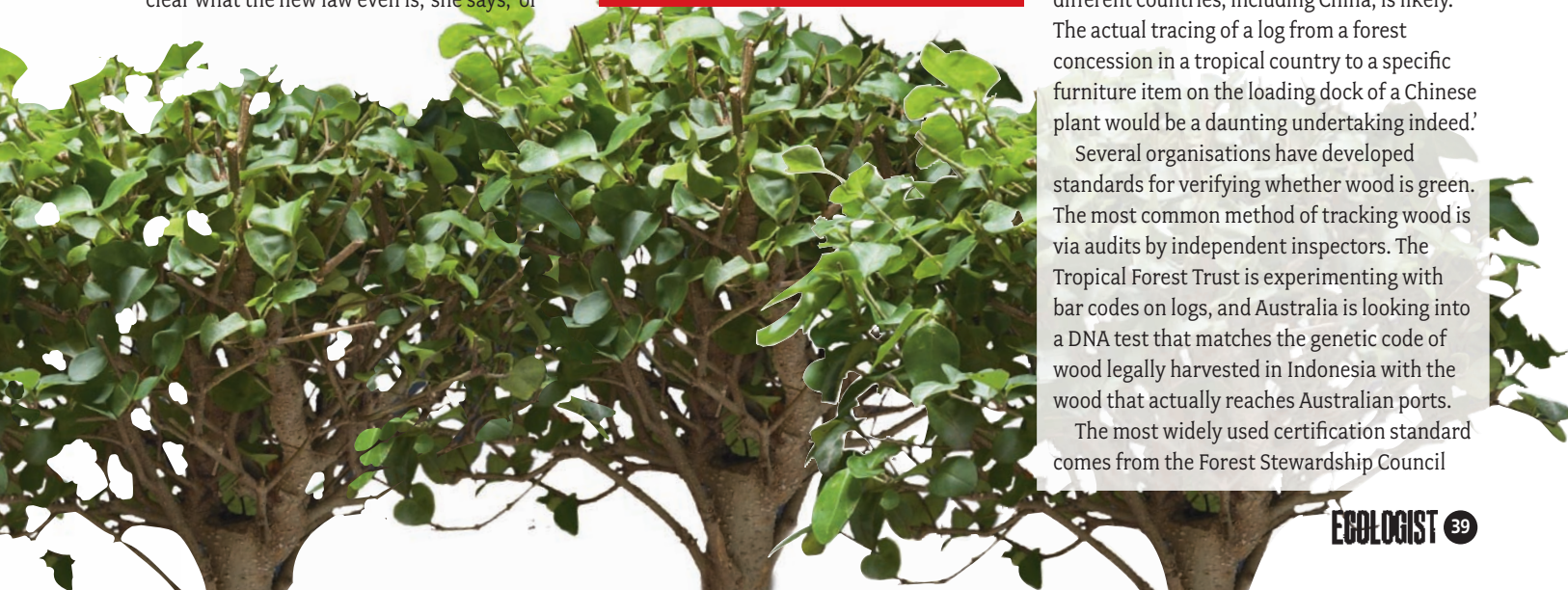
‘By the time the logs get to the border a lot of different operations have mixed their logs together – it’s not a clean chain,’ she says. ‘And once the logs hit China it’s complete chaos. A train comes in and 100 brokers are lined up, pointing at different cars and buying them on the spot through mobile phones. It’s that fluid. There’s certainly no long-term relationship between suppliers and companies. So how can you possibly say where that log came from once it hits the border, or what happens to it when these hundreds of wholesalers and distributors buy it? The chain of custody is already shattered before it leaves the border.’

Fraudulent documents are also laughably easy to obtain. Logs from Indonesia, Malaysia or Africa are often laundered through various districts and entrepôts, where corrupt officials stamp them. By the time the logs reach China, they have become legal imports. ‘The longer the chain gets,’ says McDermott, ‘the harder it is to be sure the documentation is accurate.’

The WWF report co-authored by McDermott points out that a piece of furniture is likely to contain multiple species of wood purchased from multiple vendors who, in turn, bought the wood from multiple middlemen. A single piece of furniture, ‘could contain wood products involving dozens of separate companies at different processing and distribution levels. The inclusion of wood from a number of different countries, including China, is likely. The actual tracing of a log from a forest concession in a tropical country to a specific furniture item on the loading dock of a Chinese plant would be a daunting undertaking indeed.’

Several organisations have developed standards for verifying whether wood is green. The most common method of tracking wood is via audits by independent inspectors. The Tropical Forest Trust is experimenting with bar codes on logs, and Australia is looking into a DNA test that matches the genetic code of wood legally harvested in Indonesia with the wood that actually reaches Australian ports.

The most widely used certification standard comes from the Forest Stewardship Council



(FSC). Based in Bonn, Germany, the FSC puts its logo of approval on wood products worth approximately \$5 billion each year. What this label means is unclear. Last October, *The Wall Street Journal* reported that the FSC was certifying wood from companies known to be destroying tropical forests, and noted that it based its recommendations on reports done by outside auditors who were paid by the companies they were rating. FSC has since

vowed to tighten its criteria for approval.

'Tracking is just so central to all of this,' says McDermott. 'If there is no credible way to track this wood as it moves around the world you're lost before you start.' In any case, certified wood barely registers in the timber trade, accounting for an estimated 7 per cent of volume.

Market pressures may eventually improve this. The EU and Japan, for instance, have adopted procurement policies that require

companies bidding on civic contracts to prove the wood they use is legally and sustainably harvested. In January, New York City banned the use of Amazonian hardwoods for park benches. In February, the office products company Staples ended its relationship with Asia Pulp & Paper Co. (APP), one of the world's largest paper companies, with big pulp mills in Indonesia and operations in China. According to *The Wall Street Journal*, Staples' vice-president for environmental issues didn't cite green concerns for the decision, but the 'great peril to our brand' of being associated with APP.

The ostrich mentality

Pressuring large retailers may make a dent. Wal-Mart, The Home Depot, Lowe's and Ikea have become sensitive about the issue and pledged to improve the sourcing of their wood, though with little follow-up or effect. In December, EIA released an investigation of manufacturers that supply wood products to Wal-Mart. 'The suppliers pretty unanimously said Wal-Mart does a lot of inspecting in terms of quality control, but nothing in terms of the sources of wood,' says David Groves of EIA. 'We went undercover at one manufacturer and asked about the source of the wood, because we needed to know for our customers, and she laughed as if we were kidding. Whenever we asked whether big customers like Wal-Mart asked about origins, they said no, never.'

The Home Depot's website declares: 'We now know item by item – from lumber to broom handles, doors to molding and panelling to plywood – where our wood products are harvested.' 'That just doesn't sound feasible at all,' says the F&E's Constance McDermott.

On the supply side, China's response to illegal logging has been contradictory. Last August, for instance, its State Forestry Administration and Ministry of Commerce issued guidelines for all Chinese companies doing logging overseas. The guidelines endorse sustainable forestry and the preservation of biodiversity.

More typically, however, Chinese authorities deny that any illegal wood is entering the country, deny any responsibility for criminal acts performed in other countries, or put the blame on Western consumers. They show little interest in certification mechanisms, preferring to focus on domestic forestry achievements, which are considerable. The government is in the midst of planting 2.5 billion trees, the biggest reforestation project ever undertaken. In December, in an article in the journal *Science* titled 'China's Forestry Reforms',

Corruption: the rot sets in



One of the most toxic consequences of illegal logging is corruption, which rots respect for law and destroys not only lives, but also hope. The scale of what is occurring would be impossible without the help of crooked officials. 'In several country case studies, illegal logging is financed and conducted by criminal syndicates and mafias with high-level connections,' notes the 2007 EIA report. 'Bribery and impunity undermine the rule of law in developing countries and cripple the enforcement functions of government agencies.'

The network of corruption is wide. When EIA traced the merbau logs involved in that \$1 billion-a-year smuggling ring, the trail led from the forests of Papua, Indonesia, to ports where the Indonesian military allowed the logs to be shipped to middlemen in Jakarta, Singapore and Hong Kong. Next the logs passed through Chinese customs – despite Indonesia's ban on all exports of merbau and China's bilateral agreement not to import it. The logs ended their trip at Chinese factories that make flooring for export to the US and elsewhere. After the report was

released, in 2005, the Indonesian government cracked down and arrested some of the smugglers. The illegal traffic slowed. Corrupt judges acquitted all but a few underlings, however, including every major suspect, and by 2007 the smugglers were back in business.

Matthew Steil, research associate for the World Resources Institute's forest initiative in central Africa, worries about the Chinese companies flooding into Africa and exploiting its resources – but he worries just as much about other pernicious long-term effects. For instance, the Chinese are changing the development model in Africa. Loans from Western governments and institutions, such as the World Bank, come with environmental and accounting requirements, but the Chinese impose no such conditions.

'Over the last 10 or 15 years, these governments had been moving toward better governance, more transparency, more sustainability,' says Steil, 'but with the influx of all this money with no strings attached, China has basically subverted the whole process. Everybody was getting more involved – the local populations, the multilaterals, the increasing integration of all the stakeholders. Those processes have been shoved to the side in favour of direct negotiations between the minister of mines and the Chinese investment bank. It becomes this bilateral affair between highly corrupt, money-hungry politicians on the African side and investors on the Chinese side who are looking to acquire as many resources as they can. Chinese companies are also pushing back against the need to adhere to any environmental or social standards. So things are actually going backwards now.'

several Chinese scientists boasted that in the past six years the country has invested \$22 billion in the forestry sector, with plans to invest another \$68 billion in the next four, and that the wood products industry is booming.

'The article is true insofar as what it mentions,' says the Smithsonian's William Laurance, 'but there was not a word about the wood industry's ties to illegal logging.' *Science* published his tart response: '[The authors] fail to even mention China's burgeoning consumption of imported timber – much of it illegally harvested – and its implications for Chinese forestry and the global environment.' As long as this wilful denial continues, so will China's complicity in illegal logging.

The other giant whose head is stuck in the sand is the US, where consumers know little about illegal logging or certified wood. The Bush administration denounces illegal logging, but, like China, blames other countries and turns a blind eye to imported wood of dubious origin.

Strategies for coping

That may change. In May, Congress passed an amendment to the Lacey Act that bans the import, sale or purchase of wood products that

violate foreign or domestic laws or international treaties. In short, the law criminalises most of the wood products entering the US from China. Environmental advocates believe this could be a crucial weapon against illegal logging.

'If even a small group like EIA can track this illegal wood into Wal-Mart, we can give our information to the Justice Department and it can open an investigation,' says David Groves. 'The Wal-Marts and Home Depots do not want to think about having a Justice Department investigation against them. Once a Wal-Mart or a Home Depot starts asking its Chinese suppliers where their wood comes from and the suppliers' access to US markets depends on their answer, the Chinese government might become more cooperative.'

Other promising strategies include satellite technology to detect incursions by illegal loggers and the so-called REDD mechanism (Reducing Emissions From Deforestation and Degradation). REDD was an important topic at the recent UN climate talks in Bali. Under this mechanism, which could become part of the next Kyoto agreement, wealthy countries would pay developing countries for every hectare of forest left standing. The payments

could amount to billions of dollars – excellent motivation to protect forests.

Meanwhile the deforestation continues at a ferocious pace, as does consumption of the products that are a result of it. Mark Ashton points out that China is doing what Europe did in the 18th century and the US did in the 19th century: fuelling its economic growth by devouring natural resources – its own and others'. Historically, he says, countries have not worried about deforestation until most of their trees are gone and they are suffering the consequences of a timber famine, such as a shortage of construction material or drinking water. In his view, most of the proposed solutions won't stop this exploitative process.

'You can talk until you're blue in the face about laws and certifications,' he says, 'but if you don't have strong land tenure – property rights – and enforcement of strong environmental laws, you're a goner. And those only come with poverty alleviation.' A problem even harder to tackle than illegal logging. **F**

Steve Kemper is a freelance journalist who has written for *Smithsonian*, *BBC Wildlife*, *National Geographic* and other magazines

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Try not to gulp when you read the next sentence.

According to lobby group Leave Them Kids Alone, upwards of 3,500 UK schools are fingerprinting their students, with biometric equipment bought from two Department for Children, Schools and Families-approved suppliers.

Could there be a more frightening motif for our brave new world of order and control?

It's true that this equipment is, ostensibly, being used for computerised class registers and libraries, in order to ease the bureaucratic headache of many schools. True, too, that the Information Commissioner has issued guidelines that parental consent should be obtained, and records removed by a data-cleansing service when a child leaves the school. But that really is not the point.

The trend speaks volumes about our mechanised approach to our children in an education system created in the image of the Industrial Revolution and still maintained today, in service of keeping the cogs in the global economy turning. Perhaps it is time to update the old adage that a child is not a vessel waiting to be filled, but a lamp to be lit. In today's educational climate, perhaps we need to see children not simply as units to be processed and counted, but instead as future citizens to be empowered to address boldly the legacy of problems – environmental, social and economic – they will inevitably face as adults.

Although businesses today urgently need people who can cope with and contribute to the breathless rate of economic, technological and ecological change, Sir Ken Robinson, author of *Out Of Our Minds: Learning to be Creative*, thinks that schools are failing adequately to equip children with the qualities they need to do so.

'There is another crisis today in addition to the climate crisis,' he says. 'It's a crisis of human resources, and in particular a failure to tap the full potential of human creativity and imagination. There are major problems facing all organisations in recruiting and retaining people with creative abilities, powers of communication and adaptability. Although young people have these qualities in abundance, by the time they emerge from formal education many of them do not.'

The decline in divergent thinking

Revealing research shows that young people lose their ability to think in 'divergent or non-linear ways' as they get older. Divergent thinking is defined by the ability to generate many, or more complex or complicated, ideas from an original idea, and then to elaborate upon those ideas. It is a key component of creativity.

More than a decade ago, in their book *Breakpoint and Beyond: Mastering the Future Today*, George Land, a world-renowned general systems scientist, and Beth Jarman

ROBOTIC CHILDREN

Our conveyor-belt education system is geared towards the production of clones and parrots, not imaginative, creative and curious human beings. Is it any wonder our children are stressed and unhappy? **Nick Nettles** reports

recorded research on divergent thinking that they had carried out over a series of years.

Of 1,600 children, aged three to five, who were tested, 98 per cent showed they could think in divergent ways. By the time they were aged eight to 10, 32 per cent could think divergently. When the same test was applied to children aged 13 to 15 years old, only 10 per cent could think in this way. And when the test was used on 200,000 25-year-olds, only 2 per cent could think divergently.

The reason for this, according to Guy Claxton, professor of Learning Science at Bristol University and author of *What's the Point of School?* (published this month by Oneworld), is that school is – at worst – a protracted apprenticeship in passivity, uncritical thought and recapitulation.

'You can get good results by spoon-feeding, but you don't get creative, independent minds,' he says. 'There's no evidence that learning to solve simultaneous equations prepares you for the uncertainty and difficulty of real life. But we blunder on in the vain hope that somehow it will.'

We don't need no education

Indeed, if we are to believe the media reports of teenage gangs, binge-drinking, drug-taking and pregnancy, children have enough problems dealing with the present, let alone the harsh reality they may face in the future.

'Many young people today are exhibiting the signs of stress, which they act out in destructive and/or self-destructive ways,' says Claxton. 'People "do" stress when they don't feel they have the resources to meet the demands of an uncertain world; but instead of school helping youngsters to develop those resources, like a vicious circle they increasingly see education as yet another set of demands they have to meet.'

Clearly, to create leaders and managers to steer the business community in the right direction is not the only purpose of schools, but as Maurice Holt, emeritus professor of Education at the University of Colorado at Denver, says in his 2002 article, 'It's time to start the Slow School Movement', the purpose of education should essentially be about equipping children with the ability to act responsibly in a complex society.

Richard Gerver, an award-winning primary school headmaster at Grange Primary School, Derbyshire, agrees. 'We have to re-engage with the essential purpose of education and question its underlying moral imperative,' she



Open to examination

English pupils now face 70 standardised exams in their school career. This reflects a broader shift in our attitude to children. Today, we find it hard simply to let them be. We prefer to micromanage, monitor and measure everything they do, as though child-rearing were the same as product-development. Instead of setting them loose in the park, we enrol them in organised sports or herd them into entertainment complexes to play under the watchful eye of trained staff and CCTV cameras.

Just as targets warp priorities from the NHS to the police service, an exam-centric approach can push teachers to 'teach to the test' rather than promote real learning, imagination and problem-solving. To boost rankings, schools find ways to massage exam results; eventually, when the pressure for top marks becomes all-consuming, exams lose their currency. A-level grade inflation has made it so hard to distinguish between pupils that Imperial College recently launched its own entrance exam.

For pupils, exams are a blunt instrument. What they measure best is how good you are at sitting exams. The New Economy needs nimble-minded innovators who can think across disciplines and relish the challenge of learning throughout their lives. These are the people that will create the next Google, invent an alternative fuel or devise a plan to slay poverty in Africa. Making a fetish of exam scores encourages pupils to serve up oven-ready answers, to tick the box instead of thinking outside it.

True learning defies tests, targets and timetables. It is fluid, unpredictable and fiendishly hard to measure. It is also rich, potent and exhilarating. One way to bring that spirit into our classrooms is to accept that much of the best learning cannot be reduced to a number. As Einstein said: 'Not everything that can be counted counts, and not everything that counts can be counted.'

Across the Far East, states are trimming the academic workload, loosening up curricula to foster creative thinking and putting less emphasis on test scores. Says a former education minister of Singapore: 'If we stick only with the national exams as a means of (measuring children)... it is transparent and simple, but it will tend to

narrow our definition of talent, and it will tend to narrow our definition of success.'

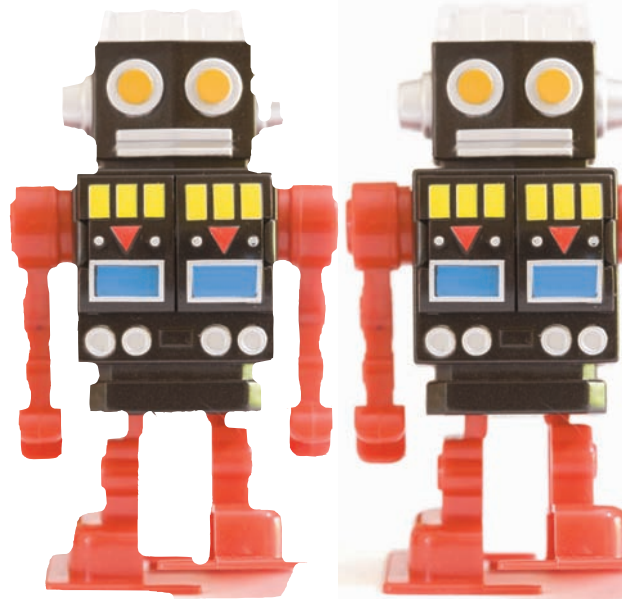
Finland has one of the highest university graduation rates in the world and a dynamic economy. Apart from finals, children sit no standardised exams. Schools use tests to track pupils' progress, but written reports take precedence over marks until secondary school. Finland shows its teachers the same trust: it trains them rigorously and then leaves them alone to get on with the job rather than forcing them to quantify their every move.

Perhaps the tide is starting to turn in Britain, too. Wales has already scrapped standardised exams for children aged 7 and made them optional for those of 11 and 14. Scotland also uses tests more sparingly. By 2009, English teens may take a third fewer exams in their final two years.

Many schools are now casting off the National Curriculum altogether. At St John's School and Community College, a state secondary in Marlborough, pupils spread a single theme across every subject at the same time. During the Going Places module, for instance, they might study velocity in maths, the environmental impact of airplanes in science and the travel writings of Paul Theroux in English. Testing is kept to a minimum, but the real revolution is that children take the reins. Teachers ensure a class covers key concepts but the pupils decide how to explore them, writing their own curriculum as they go.

Exams are not all bad – they focus minds and spur everyone to work harder, but they should not be the driving force in the classroom. We need an education system with the confidence to let learning happen without quantifying and structuring at every turn; to train teachers with Finnish rigour and leave them to it, and reinvent our schools so the exam is no longer an end in itself. The bottom line is that children learn best when they have the freedom to take chances, to unleash their curiosity, to take charge of their own learning.

Carl Honoré is a journalist and author of *Under Pressure: Rescuing our Children from the Culture of Hyper-Parenting* (HarperOne)



says. 'We have to move beyond framing the discussion as a matter of how many exams a child has, and ask the question, "What will our children be like as people, as human beings, when they leave school?" – and having established that, what to do in the process of education to achieve that.'

Reframing the role of the arts.

Obviously, it is important not to dismiss the value of the verbal and mathematical reasoning central to academic life today. As key drivers of the Industrial Revolution, one can argue that their benefits to society to date have been immeasurable. By the same token, it is arguable that we won't work out how to solve the environmental costs of the Industrial Revolution if we continue to equate these faculties with the totality of human intelligence.

As an index of human potential, current leading-edge research into the brain points towards a far more diverse, human intelligence than previously suggested by the notion of the intelligence quotient (IQ). American psychologist Howard Gardner's multiple-intelligence theory, for example, broadens the concept of intelligence to acknowledge behaviours and skills that would otherwise be called 'abilities', as reflective of the different ways people think and learn. His schematic of eight different types of intelligence includes naturalistic intelligence (nurturing and relating to information in one's natural surroundings) and bodily-kinesthetic (the intelligence deployed in activities that utilise movement: sport, dance, acting, building and making things). Hardly the stuff that will get you into Mensa.

If we want to create an education system that creates citizens whose curiosity extends beyond the next episode of their favourite TV



soap, however, and who aspire instead to be creative, intelligent guardians of the Earth, then it's arguable that a more diverse, child-centred education, including a central role for subjects that nurture nonlinear, creative thinking, is essential.

The current UK government already knows about the value of a more creative and diverse education. Indeed, that's what a national commission, led by Sir Ken Robinson, recommended in its 1999 report, 'All Our Futures: Creativity, Culture and Education'. Without using the word 'holistic', the nub of the report's message was that the arts and humanities should have equal footing with all other areas of the curriculum, and that this was not at odds with children's academic development.

Instead of the arts and humanities becoming infused throughout the curriculum, however, the Government has instead simply tacked on a few new initiatives at its edges.

These include the much-vaunted 'arts mark' programme run by the Arts Council (which recognises schools with a high level of provision in the arts) and the Government's rather paltry investment in dance for school-age children of £5.5 million over the course of the next three years.

It would be easy to suggest that this neglect is because policy-makers have a distorted view of the arts, as less valuable than subjects such as Information Technology, which can help children take their place as workers in the information society.

But it's just as likely they are reflecting the

collective view of the arts today, as a ticket to stardom – an idea fuelled by The X Factor, Pop Idol and celebrity magazines – a path for the chosen few (yet unrealistic for the majority) to be celebrated and recognised by their peers; to be 'more' in a world where they feel 'less'.

The fact is, for creativity (as approached in schools) to be relevant in people's lives, and for them to understand the relevance of its contribution to society, it needs to be understood on more levels than we currently do. The ability of music to open the mind and utilise both hemispheres of the brain is, for example, directly relevant to numeracy and literacy, since it stimulates whole-brain thinking.

Seen from another perspective, subjects such as dance also have enormous value especially in early learning. Daniéla Hucher is a teacher of eurythmy (an art of movement that strives to reveal the fundamental creative principles underlying speech and music) and director of L'Arc en Ciel, a Steiner-Waldorf kindergarten. 'Early learning should especially focus on allowing children to properly experience their body and its capacity to walk, to jump, to dance, to climb,' she says. 'Without this experience, a child's spatial awareness, ability to experience wellbeing, and engage the full capacity of their brain, will never be complete.'

Juxtapose this with the view of Andy Burnham, the secretary of state for culture and the man behind the recent Government investment in dance. He acknowledges that dance is about self-expression, self-confidence

and physical development, and yet still refers to it as a 'pastime'.

With its emphasis on the process of self-expression, the creative experiences offered by subjects such as music, art, drama and dance can also arguably help children develop their 'emotional intelligence', by offering them a channel to express their feelings and to cope with them constructively. Essential skills, it seems, in a world marked by misunderstanding and interpersonal conflict.

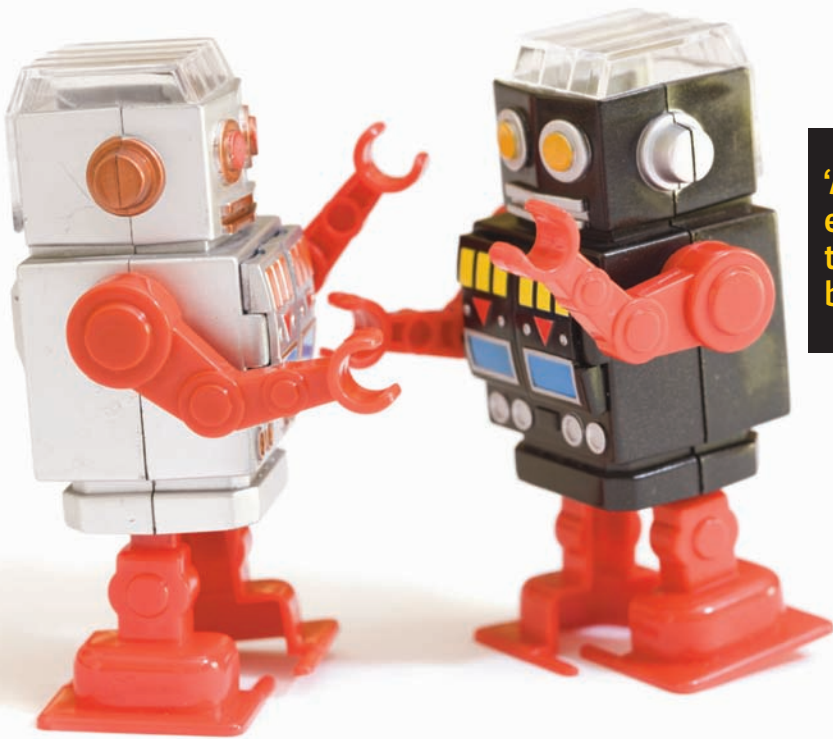
From assembly line to garden

There are many people who feel the challenge today is not just to change the curriculum, or even the pedagogy, but instead to transform education totally by changing the root metaphor on which it is actually based.

'We are still in thrall to two ideas,' says Guy Claxton. 'That a school is like an assembly line, bolting on bits of knowledge as kids go by in batches, and like a monastery, where the priesthood dispenses Truth to the novitiates from on high. New metaphors might be of a school as a "learning gymnasium", where you go to build your mental muscles and develop a fitter mind. Or school as an exploratory, where the curriculum is composed of real challenges that stretch and strengthen young people's resilience and resourcefulness.'

Sir Ken Robinson calls for education to be based on a new, more organic metaphor, one that can offer a more personalised education to fit the individual needs and motivations of each student. 'Gardeners and farmers know they can't make plants grow: plants grow themselves,' he says. 'Gardeners and farmers provide the conditions in which they will do that best. That's the challenge for education – to provide the best conditions in which the individual talents of all students will flourish.'

'The ability of music to open the mind and utilise both hemispheres of the brain is directly relevant to numeracy and literacy'



'A recent report says the skills encouraged by arts and crafts do more than simply stimulate the part of the brain that controls movement'

With its emphasis on the role of the imagination in learning, sensitivity to the emotional development of the child and an overarching goal to provide children with the basis to become free, moral and integrated individuals, you might think the Steiner-Waldorf pedagogy has finally come of age, or that the modern world had finally come round to what Rudolf Steiner was saying 90 years ago. Today, there are more than 1,000 schools worldwide, and this month the Hereford Waldorf School is set to become the Hereford Steiner Academy – the first state-funded Steiner-Waldorf school in the UK.

Christopher Clouder, CEO of the European Council of Waldorf Schools and director of the UK Waldorf Schools Fellowship, says: 'We're finding that the ideas we've espoused for decades, such as the central role of play in early learning, social emotional learning, a responsible attitude to the natural environment and the importance of art and craft activities, are becoming more mainstream. We don't feel we have all the answers, but certainly feel that what we offer is beneficial to more children than simply those that attend our schools.'

Indeed, the manual skills that crafts such as weaving and blacksmithing offer may become increasingly in demand in the future. The fact that children in mainstream schools don't learn skills such as these only reinforces our over-reliance on technology, and reduces the likelihood that they will learn to reuse and repair things. Not only that, these children will also miss out on the role such activities can play in the development of the brain.

A recent report, commissioned by the Ruskin Mill Educational Trust, says the skills encouraged by arts and crafts do more than simply stimulate the part of the brain that controls movement. The report's author, Dr Aric Sigman, says without arts and crafts children will miss an important part of cognitive development. 'The hands are particularly sensitive to perceiving and transmitting exceedingly sophisticated information to the learning brain through sensation and movement,' he says. 'Using their hands simply makes children more intelligent.' So, less time holding a mouse in their hands and more with a screwdriver or chisel?

Grassroots change

We must beware, however, of creating a one-size-fits-all pedagogy – even those with a higher ethical agenda, such as Waldorf Schools – at the expense of promoting diversity. Not everyone wants the same thing for their children, and while it may gall exponents of different pedagogies to admit it, parents should be free to choose what they want for their children.

Sir Ken Robinson believes we need to move beyond the obsession with tinkering with the curriculum and standards (both of which have preoccupied successive governments for 30 years) and instead create a diversity of schools that are able to meet similar standards, but in their own ways. 'The catering profession offers a powerful metaphor here,' he says. 'In the catering sector there are two models of quality control. One is standardisation, which is what drives the fast food industry. No matter which outlet you go to, you know exactly what you're

going to get. The other model is the Michelin Guide. The guide sets out the characteristics of great restaurants, but they don't tell them how to reach those standards. They do it in their own way, at a local level. The result is that every restaurant is different, and all great.'

Guy Claxton believes this diversity can be created by offering teachers more flexibility about the style in which they deliver a subject. His 'Building Learning Power' programme for teachers is being used at more than 1,000 schools throughout the UK, helping children to be more *resilient* (being able to focus on learning when learning becomes difficult, and staying engaged despite distractions); *resourceful* (being able to use a range of strategies to maximise learning); *reflective* (being able to take responsibility for organising and planning learning) and *reciprocal* (being able to work alone or share ideas in group work).

Sam Freedman, head of the Education Unit at think-tank Policy Exchange, believes we can create more diversity in mainstream education by expanding the range of outside providers. 'Many people will assume this will play into the hands of big businesses, but there are many outside providers offering new innovative approaches to education, like Sweden's Kunskaapskolan, which offers a more personalised education to children who are empowered to identify their own goals,' he says. 'Opening up to other suppliers offering different pedagogies, like Steiner-Waldorf and Montessori, would also further enrich the national curriculum.'

Can we really wait for central policy to catch up with current thinking, though?

There's no doubt we should keep lobbying, but in the meantime we can begin by creating educational projects at grassroots level right now. And it's at the grassroots level that really exciting things are happening. Inspired by a range of views and ideas, including the Reggio Emilia pedagogy, which offers children some control over the direction of their learning, Matt Goldman, founder of the US-based Blue Man Group, recently set up an independent

school in New York, called the Blue Man Creativity Centre. He says: 'Our educational model comprises six Areas of Connection, which describes our approach and the key elements we want to "connect" to the subjects in our curriculum. Each of these areas relates in some way to the idea of connection, whether it be the connection to a community, to one's emotions, to one's artistic voice, to one's body, to the world, to one's interests or to one's sense of joy and wonder. Our model emerged out of a desire to achieve a new kind of balance between academic rigour and academic enchantment. We believe that both are essential attributes of a truly exceptional education.'

Learning for the planet

In the Ardèche region of France, Sophie Rabhi, daughter of famous French environmentalist Pierre Rabhi, runs L'école à la Ferme, open since September 1999. The school follows a pedagogy that embraces the child-centred educational ideas of Maria Montessori and the methods of non-violent communication formulated by Marshall Rosenberg. More recently, a project has been undertaken to

situate the school amid a group of retirement homes, and so encourage the connection of young and old within the community.

In Bali, the Green School, which opens this month, offers a vision of a school its founders say will create inspired thinkers and creative problem-solvers, knowledgeable about all aspects of life and capable of leading a changing and challenging world. The school claims to offer the same holistic educational approach of Steiner-Waldorf, coupled with Howard Gardner's idea of multiple intelligences, to create a fertile environment for a wide variety of learning

More information

www.kunskapsskolan.se
www.greenschool.org
www.la-ferme-des-enfants.com/index.htm
theblueschool.net
www.steinerwaldorfeurope.org
www.herefordwaldorfschool.org
www.buildinglearningpower.co.uk/blp/home.html
www.montessori.org.uk/schools.php

styles. Its students will know about everything from organic gardening to website design, from running a small business to offsetting carbon emissions.

If we do not reconsider the role education plays in society, then from the viewpoint of the environment there's a lot at stake. Leaving the education system joined at the hip to a deeply flawed economic system is not an option while that system fails to embrace the triple-bottom line, or planet, people and profit.

The notion of sustainability implies there being enough people to carry through change. Unless we nurture the current and future generations of children to engage with society in new ways, any changes we collectively make to address the environmental imperative will be short-lived. We must be willing to draw on the full range of human intelligence in service of creating a better life for all. Only a more diverse, creative education can do that. **E**

Nick Kettles is a freelance writer and consultant to small businesses seeking to express better their unique contribution to world peace and sustainability

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All hands to the plough

The community supports the farmer and the farmer supports the community. Why isn't everyone taking part in the latest agricultural revolution, wonders **Ed Hamer**



Autumn: a season of abundance, when the fruits of the agricultural year are harvested, gathered and celebrated. September has traditionally been a time when our village halls, schools, churches, greens and pubs have hosted a wholesome display of prize courgettes, plump pumpkins, sacks of spuds and bushels of corn in a feast of thanksgiving. Today, however, the evocative harvest festival is just as likely to serve as an uncomfortable reminder of that new watchword 'food insecurity', rising prices and just how dislocated we have become from local, seasonal produce.

There are obviously exceptions. If you're a celebrity chef or an ethical consumer you may well enjoy the warm glow of self-satisfaction that comes from joining the latest lifestyle crusade; you may even make some effort to buy seasonal and local produce, as and when it's convenient. If, on the other hand, you happen to be a member of one of the 30 or so CSA schemes currently operating across the UK, quite simply you won't be afforded the luxury of becoming dislocated from your food.

Community Supported Agriculture (CSA) is a term used loosely to describe a relatively new model of farming, pioneered in Japan, Germany

weeding, soft-fruit picking and harvesting, in return for a reduction in their subscription fee.

Shares cover the cost of production and currently support five part-time members of staff and one full-time farmer, Nicky Cooper. Subscriber participation is the most essential component of the CSA model.

‘Without their help, production costs would be much, much higher and we just wouldn’t be able to farm organically,’ says Nicky. ‘More than three-quarters of our subscribers choose to help on the farm, and those who don’t are happy to support the part-time workers by paying a little bit extra.’

‘We currently have 170 subscribers who receive an equal share of everything that is harvested from the farm each week. If it’s a good year, everyone gets a bumper veg box; if one of the crops fails, however, we supply less of that crop than we planned. Our subscribers are much more aware of the seasons, the weather and the health of their crops. It’s about sharing the risks and rewards of farming.’

And it’s not just a greater awareness that CSA consumers benefit from. Through marketing locally, CSAs immediately reduce the number of links in the supply chain, cutting transport, retail and marketing costs and passing these cuts directly on to the consumer. As a result, CSAs are consistently able to compete with supermarket organics for both freshness and affordability (see box on page 50), dispelling the myth that local organic food is available only to a select minority.

Many of the UK’s existing CSAs have taken the issue of affordability one step further by offering subsidised shares to those local residents who cannot afford the full share price. Swillington Organics, near Leeds, is currently piloting a scheme to allocate shares for its veg boxes to low-income families through local doctors’ surgeries.

‘Fresh, seasonal and organic food should not be a luxury enjoyed only by the middle-classes,’ says Kirsten Glendinning, one of the scheme’s farmers. ‘It should be available to everyone as an alternative to intensively-farmed supermarket produce.’

While the majority of CSAs worldwide are built on the foundations of ecological agriculture, organic certification itself becomes unnecessary for a system in which consumers are immediately involved in the production of their own food. ‘In a typical CSA, organic standards are upheld regardless of certification due to the transparency and integrity of the system,’ says Glendinning. ‘The only time when



Pictured: Volunteers help out at the EarthShare farm near Forres, in Scotland

Opposite: An integral member of the team

Below: Ploughing the fields ready for sowing

and Switzerland during the 1960s, in which communities actively support the very farmers producing their food. That anyone would want to place culture over convenience may seem a far-fetched idea in a world where Tesco, Asda, Sainsbury’s and Morrisons control 72 per cent of UK food sales, but if recent rises in global food prices are anything to go by, convenience-culture now appears to be entering freefall.

Thinking outside the box-scheme

CSAs first came to our shores with the establishment of EarthShare box-scheme near Forres in Scotland, in 1994. Originally set up by a handful of committed growers as a non-profit company, the scheme currently supplies organic soft fruits and vegetables to as many as 180 local families every week from a 26-acre, gently sloping site overlooking the Moray Firth.

The scheme works by selling weekly veg box shares, which subscribers sign up to for a year at a time. The cost of a share varies depending on a number of factors, such as the size of the box and where it’s collected from, but most importantly, whether shareholders become actively involved in growing their food. Subscribers are encouraged from the very start to help with seasonal tasks such as

‘CSAs are able to compete with supermarket organics, dispelling the myth that local organic food is available only to a select minority’



certification should really be necessary is when selling surplus produce, which would otherwise go to waste, on to organic wholesalers.'

Security and independence

One of the greatest concerns for the conventional farmer in the UK today is securing a market that will provide a fair return for his or her produce. As a result, many farmers are dependent on both synthetic pesticides and fertilisers, to minimise the risk of crop losses and to boost productivity. Under a CSA agreement, however, where a local market is guaranteed in advance, this concern becomes largely redundant – and so too does a dependence on agrochemicals.

Direct marketing obviously also increases the farmer's share of the food pound, which elsewhere has fallen dramatically. In the 1950s, UK farmers received on average 50p in every pound spent on food; today that figure has fallen to less than 8p. By contrast, farm wages typically account for the largest share of CSA subscription costs, with schemes such as Stroud Community Agriculture able to pay its farmers a living wage, compared to the £5.53 per hour average across the rest of the industry.

As a result of this mutual support, CSA farmers are given the security to reduce dependence on intensive agricultural systems, and the freedom to explore more localised and traditional farming practises. Importantly, the farmer also becomes valued once again as an essential part of the local community, providing not only fresh and affordable food but also more often than not regular well-paid employment.

Although the CSA model itself is relatively new here in the UK, the local-food movement



on which it is based is well established. The unprecedented success of farmers' markets, which have increased from just one in 1996 to more than 600 across the country today, is just one example of a willingness on the part of consumers to reconnect with their food. Between 2005 and 2006, organic sales made through direct marketing outlets alone increased by eight per cent to £136 million, demonstrating a dramatic rise in demand for ecologically produced, local food.

Separate to this shift in consumer awareness, however, and perhaps more immediate, are the looming challenges posed by the peak oil crisis. It is no coincidence that the sharpest rise in global food prices for a generation has hit the headlines in the same 12 months that crude oil has doubled from \$75 to \$140 a barrel. The UK has seen the price of staples such as bread, milk and eggs increase by an average of 11 per cent over that period as a direct result of the rising cost of oil accumulating along the supply chain.

A positive aspect to peak oil

Even the most rigid commentators recognise that this trend only strengthens the case for localisation of the food economy. With modern agriculture addicted to cheap oil at every stage of production, from mechanisation and a dependence on agrochemicals through to processing, packaging and transport, peak oil is now emerging as the catalyst, driving a fundamental shake-up of the ways in which we grow, process and consume our food.

It is in this arena of uncertainty that CSA now finds itself, not only catering for a shift in public awareness and demand, but also offering a timely solution to one of the most pressing challenges of the 21st century. Rob Hopkins, the architect of the increasingly influential Transition Towns movement, believes that the CSA model will be integral to building resilience in a post-peak oil society.

'CSA essentially offers a unique model of farm security and community ownership at a time when agriculture is entering a period of unprecedented change,' he says. 'CSAs are central to the idea of reskilling our agricultural workforce for the coming transition to post-peak oil farming. As well as offering an achievable model of local and seasonal production they also provide an opportunity to re-engage our communities with their food.'

Interestingly, the uptake of CSAs in the UK has been relatively slow compared with its success in one of the world's most oil-dependent regions: North America. The CSA concept was first introduced to America from Switzerland in 1985, at a time when as many as 20,000 farmers every year were leaving the land as a result of intensification. The idea of supporting rural livelihoods in this way was immediately embraced by rural communities that had suffered at the hands of industrial

Stroud Community Agriculture (typical weekly share)	Tesco	Sainsbury's	Waitrose
500g potatoes	£0.40	£0.36	£0.50
500g carrots	£0.48	£0.47	£0.66
400g onions	£0.32	£0.51	£0.73
400g leeks	£1.73	£1.85	£2.00
400g Brussels sprouts	£0.40 (non-organic)	£0.71	£0.56
1 swede	£0.79	£0.98	£0.87
150g salad pack	£2.40	£2.99	£2.82
1 bunch of parsley	£0.99 (non-organic)	£0.79 (non-organic)	£1.69 (non-organic)
£7.38	£7.51	£8.66	£9.83

Source: Stroud Community Agriculture; The Story of CSA in Stroud, prices accurate as of February 2008

its promotion, particularly among farmers. A common misconception is that CSAs imply a one-way relationship of farmers seeking community support, whereas in reality it is usually the community seeking the support of their local farmers.

Last September, the Soil Association was one of nine organisations collectively awarded a £10 million Big Lottery Fund grant under the banner 'Making Local Food Work'. Over the next five years, the programme intends to help kick-start more than 650 local food initiatives, from CSAs to farmers' markets, food co-ops and buying groups. Offering advice, workshops and online support, the Soil Association aims to provide practical training and support for individuals and groups interested in setting up CSAs in their own communities.

Amanda Daniel, information officer for the project, believes awareness is key in launching CSAs to a national audience. 'It's really a two-sided challenge: to raise consumer awareness on the one hand and to get farmers themselves interested as a viable business opportunity,' she says. 'We are really very excited about the potential of CSAs to offer a realistic and achievable model of sustainable local food production at a time consumers are most concerned about rising food and fuel prices.'

And this, in short, appears to be the defining factor. Consumer appetites have been shifting steadily over recent years towards both a reconnection with real food and an awareness of where it comes from. More recently this trend has been surpassed by the urgency with which we must now address our food supplies in increasingly uncertain times.

There is no doubt that to embrace the local food model on a national scale would represent the most dramatic revolution of our food supply since the second world war. What Community Supported Agriculture offers however, is a unique opportunity to capitalise on growing consumer momentum, with an immediate and effective alternative offering not only a reconnection with the land, but ultimately local food for all. **E**

Ed Hamer is a freelance journalist specialising in agricultural globalisation issues. He also works on a small family farm in Devonshire

For information about and support in starting a CSA in your community, visit: www.soilassociation.org/csa www.makinglocalfoodwork.co.uk



Pictured: Planting the next crop of organic vegetables
Left: Greenhouses protect community supported lettuce

agribusiness. Between 1985 and 1994, 600-plus CSAs had been established, and by 2002 there were 1,200 initiatives across the US and Canada supporting more than 100,000 families.

Above and beyond building resilience against oil dependency, however, CSAs also offer a more holistic approach to food production. The UK's current model of agricultural efficiency has largely restricted livestock production to the west of the country and cereals to the east, and is inherently unsustainable economically and environmentally. Localised, mixed farming of crops and animals, which share inputs and outputs such as manure, bedding straw and feed grain, makes a lot more sense than separate enterprises that rely on synthetic inputs.

One of the greatest assets of CSAs is how they are adapted to meet the specific needs of the communities they serve, typically reflecting local culture and what can sustainably be produced from the land available. As a result, no two schemes are likely to be the same. Dragon Orchard Cropsharers, near Ledbury, for example, produces local varieties of dessert, cooking and cider apples, as well

as pears for a traditional Herefordshire market, while Stroud Community Agriculture specialise in biodynamically produced meat and vegetables to meet local demand.

Part of 'sharing the risks and rewards' also includes the amenity value of the land itself. Nearly all existing CSAs in the UK organise social events as an integral part of their service. Swillington Organics, for example, holds monthly activities, including bonfire nights, barbecues, open days and workshops.

'It's about building community,' says Kirsten Glendinning. 'Social events give our partners in the scheme the opportunity to meet and share an interest in where their food comes from. CSAs are as much about reconnecting us with the land as growing our food.'

Two-way street to success

Despite the rosy-glow of the good life that surrounds the concept, however, CSAs are in danger of being overlooked by even the most conscious of consumers. The term itself can, at best, conjure up responses of the 'something to do with the Child Support Agency?' kind, and at worst can appear too technical and hinder

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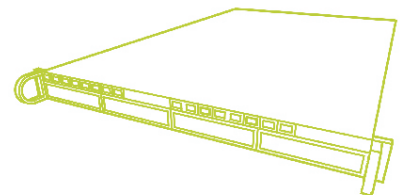
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56 In Season Tune into trees, cycle in comfort, tuck into organic fortnight and make plum jam – all in September. By **Rachel Clode**

59 Local Hero: Louise Amos, shepherd 'I saw the advert and I thought "Dare I?"' **Dixie Wills** meets the woman who swapped a deskbound data-crunching job for five dogs and a flock of 90 black Hebridean sheep – and who could well spark a revolution in the way we manage the British countryside

64 Marauder to order It may be free, but is foraged food sustainable when it comes to restaurants? **Fergus Drennan** tackles a tricky subject then explains how to gather wild food while giving something back to the land

66 Guerrillas in our midst Are you a frustrated urban gardener with only a window box to call your own? If so, guerrilla gardening might be right up your poorly cared-for street. **Olly Zanetti** talks to planting pioneer Richard Reynolds to find out what happens on a night-time 'dig'

69 Hemp on the high street As a low-impact eco textile, hemp has huge potential – and acres of the crop are already grown here – so why isn't it taken more seriously? And why aren't we seeing more UK-grown hemp on the high street? **Laura Sevier** talks to the people behind BioRegional, the company hoping to make hemp mainstream

74 Homage to hemp Hoodies, towels, salad oil, cosmetics, cushion covers, nappies... There's not much you can't make out of hemp. **Laura Sevier** offers a selection of the best products



Wherever you see this little bird it'll point you to relevant contacts in our Green Shopping Guide



'I speak for the trees, for the trees have no tongues.' These are the timeless words of Dr Seuss's short, mossy, sort-of man character, the Lorax, demanding to know why one of his prized Truffula trees has been chopped down. *The Lorax* is one of the best – if not the best – children's storybook on the environment. *Plus ça change, plus c'est la même chose*. Written more than 35 years ago, the messages in *The Lorax* are just as prescient today: that short-term financial gain at the expense of the environment will end in disaster; that the endless 'biggering' of companies is a dangerous addiction, and that companies don't create goods we need, but the need for their goods.

Lest I get too carried away, so far, for my three-year-old, *The Lorax* is a bedtime story about 'birds and fish that are sad'. Whatever way you see it, it isn't all doom and gloom. The story ends with the very last Truffula tree seed given to a child, with a mission to go out and plant it – to grow a forest and protect it so that the Lorax and all his friends can come back. In this month's Green Pages, Laura Sevier takes a look at a rare breed of sorts – hemp – and explores the positive aspects of its revival in the British countryside. Another revival – not of the plant kingdom – is being pioneered by Louise Amos, the UK's one and only close shepherd and this month's local hero. The Green Pages is all about celebrating rare breeds, with the belief that through their stories each of us will be as inspired as the child who holds the seed of the last Truffula tree.

Matilda Lee, Green Pages Editor

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September

BY RACHEL CLODE

Pondlife

New research in the USA has shown that, globally, ponds could be greater carbon collectors than the world's oceans. Help conserve carbon and pond wildlife.

See www.pondconservation.org.uk



6-21 September National Organic Fortnight

Launching with the Organic Food Festival in Bristol on 6-7 September (come and visit the *Ecologist* stand), look out for what's going on locally in organic food, bodycare and clothes. www.soilassociation.org

Image: JAMES MORLEY

Recipe of the Month

Jammy so-and-so

With all the lovely berries and fruit available in September, make some jam. The Victorians' main source of Vitamin C came from jam; it tastes great, makes a good present and only takes an hour or so to make.

PLUM JAM

The quantity of sugar used should be regulated by the quality and size of the fruit you're using, as some plums require much more sugar than others, but as a rule allow 340g (12oz) of sugar for every 450g (1lb) of plums (weighed before being stoned). After removing the stones, put the plums on to large dishes, sprinkle them with sugar and leave them to stand for a day. Put into a preserving pan and stand them over a low heat to simmer gently for about 30 minutes, then boil rapidly for another 15 minutes. Carefully remove the scum as it rises and stir the jam well all the time. Some of the stones may be cracked and a few kernels added to the jam just before it is done, as they impart a delicious flavour to the plums. Pour into sterilised jars. Allow to cool and cover with airtight lids. Store in a dry place.



Pick of the Month

Green Cycling Knickers

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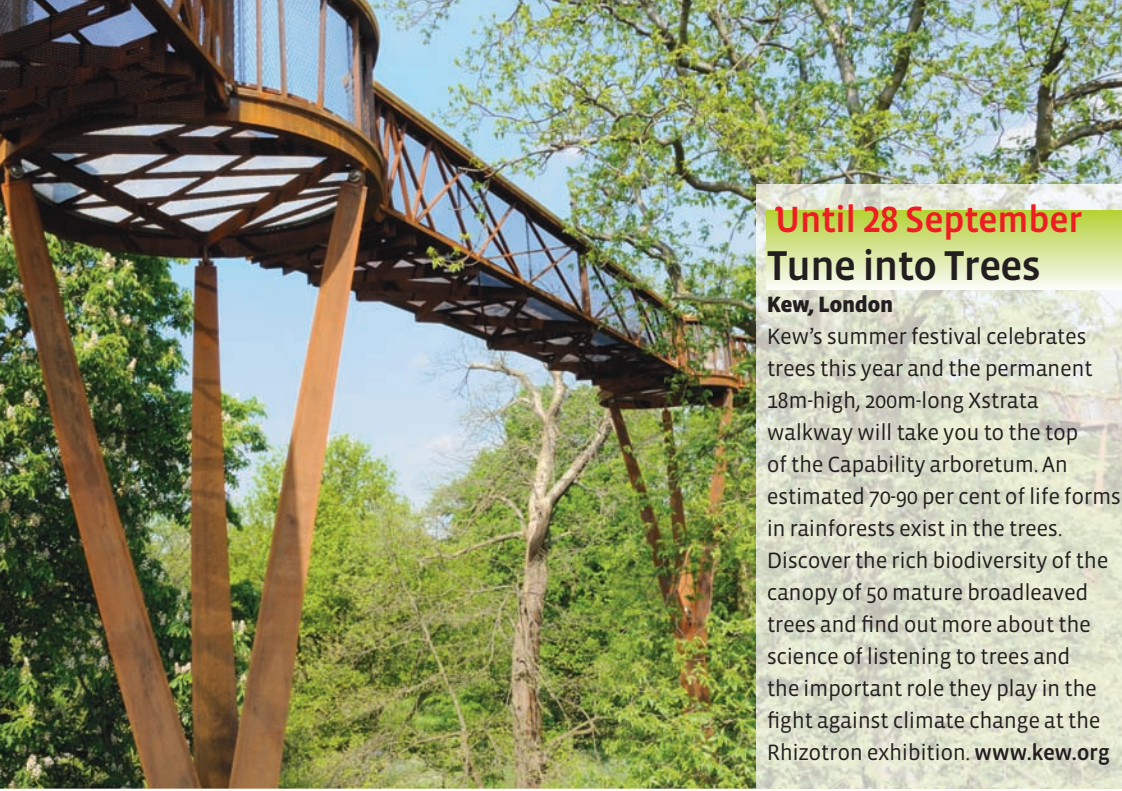
13 September - 15 November

Children in Conflict - John Keane

Aberdeen Art Gallery

Renowned war artist John Keane exhibits a collection of paintings inspired by his journey with Christian Aid to post-war projects in Angola. Following a 27-year civil war, which ended in 2002, half the population are under 15 years old. The collection evokes the challenge of reconstructing Angola and the 'indomitable optimism' John encountered. See www.christianaid.org.uk for further information.





Until 28 September
Tune into Trees

Kew, London

Kew's summer festival celebrates trees this year and the permanent 18m-high, 200m-long Xstrata walkway will take you to the top of the Capability arboretum. An estimated 70-90 per cent of life forms in rainforests exist in the trees. Discover the rich biodiversity of the canopy of 50 mature broadleaved trees and find out more about the science of listening to trees and the important role they play in the fight against climate change at the Rhizotron exhibition. www.kew.org

Food in season



Above: Make jam with your raspberries

Fruit

- Apple
- Blackberry
- Blueberry
- Damson
- Elderberry
- Greengage
- Loganberry
- Plum
- Raspberry
- Tomato

Vegetables

- Asian greens
- Asparagus
- Beans (broad, French and runner)
- Beetroot
- Broccoli
- Cabbage
- Carrot
- Cauliflower
- Celery
- Courgette
- Cucumber
- Fennel
- Garlic
- Kale
- Kohlrabi
- Leek
- Lettuce
- Mushroom
- Onion
- Parsnip
- Peas (shell, mangetout and sugar snap)
- Peppers
- Potato
- Pumpkin
- Radish
- Shallot
- Spinach
- Spring onion
- Summer squash
- Swede
- Sweetcorn
- Swiss chard
- Turnip
- Watercress



Above: Asparagus tips contain no fat or cholesterol

21 September
International Day of Peace

According to the Heidelberg Institute for International Conflict Research (HIIC) in December 2007 there were 328 global political conflicts, six of which were wars, 25 were severe crises. 238 internal conflicts and 90 were interstate. Lobby the government, protest and commit your time to helping victims of conflict. www.internationaldayofpeace.org

22 September
World Car-Free Day



Get out of your car and stay out is the message this year. Look for alternatives and commit to them. How would the cities and towns look without the back-to-back traffic and its associated noise and smells? Blooming marvellous. www.worldcarfree.net

Websites of the Month

- **Cycle Chic** Dispels the image of cyclists as Lycra-clad, fashion-absent geeks, with tips on cycling fashion, bells and blogs. www.cyclechic.co.uk
- **My Zero Waste** A lively site charting one family's quest to cut down on their household rubbish. Contains tips and advice on how to reduce waste and recycle more <http://myzerowaste.com>
- **Green Grants Machine** A free, online searchable database featuring funding programmes for environmental businesses. www.greengrantsmachine.co.uk

27-28 September
The Great British Cheese Festival

Cardiff

The biggest cheese market in the UK, with 460 different cheeses from Britain and Ireland, now has a permanent home in Cardiff. With cow, goat, sheep and buffalo cheeses from 100 different artisan cheese makers, including a local heroes market for Welsh producers, masterclasses in cheesemaking and matchmaking the best drink to your cheese.



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Sept 28-29

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Green woodwork: making a four legged stool
Timber frame construction, dry stone walling, hedgelaying...
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LOCAL HERO

Louise Amos, shepherd

With her free-ranging flock of conservation grazers, Britain's only close shepherd is resurrecting a greener way to manage the countryside. **Dixie Wills** reports

Come by! Come by!
Meg responds to the call, nipping around the back of an unruly flock of black Hebridean sheep.

Gradually, via a series of 'come by', 'away' and 'walk in' commands, she corrals them skilfully towards us. Job done, the two-year-old Border collie is rewarded with a bit of fussing. The woman stroking her is Louise Amos, who just happens to be the only close shepherd the length and breadth of the country. Furthermore, it's her five dogs and 90 sheep in a corner of East Sussex that could well spark a revolution in how we manage

Photography: PHIL FISK

Pictured: Louise Amos and her herd of Hebridean sheep patrol the 6,500-acre Ashdown Forest in East Sussex

the countryside in Britain.

For those not acquainted with the term, 'close shepherding' requires someone to stay with a free-ranging flock all day, in contrast to the modern method of keeping sheep in enclosed areas and merely checking up on them from time to time.

'You couldn't do that here,' says Louise, the 6,500 acres of the Ashdown Forest spreading out around her, 'because you'd need to put up miles of fencing.' And in the largest free public access space in the south-east, that's simply not going to happen. The problem facing the Ashdown Forest – and so many other parts of Britain – is

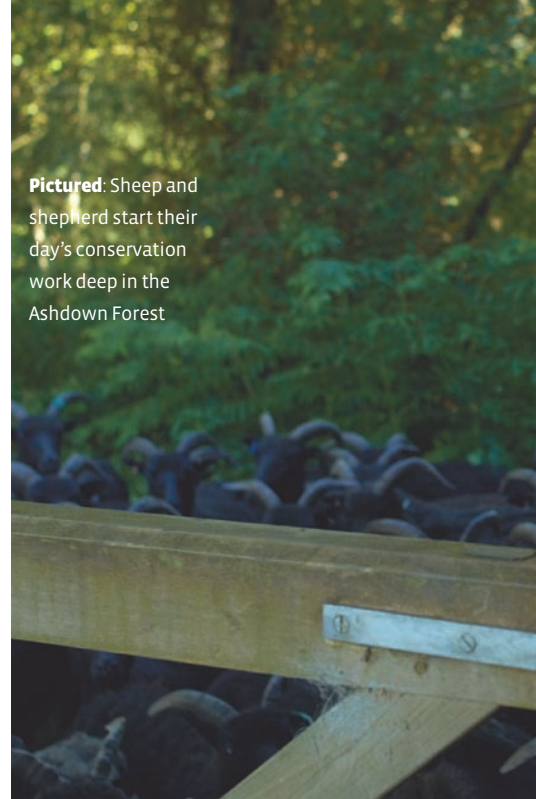
that synthetic nutrients from polluted rainwater have meant that many non-heathland plants and grasses have flourished, thus displacing the heather. No-one wants to resort to the mass use of pesticides to kill off invasive plant life, so the solution may well be found in conservation grazing overseen by traditional shepherds. Since close shepherding died a death in Britain in the middle of the last century, Louise is faced with single-handedly resurrecting the practice.

Which begs the question, how does one end up becoming a shepherd nowadays? After all, it's not the dream job of every child gazing idly out of the

Pictured: With a degree in Ecology, experience of Border collies and a love of the outdoors, Louise is a natural shepherd



Pictured: Sheep and shepherd start their day's conservation work deep in the Ashdown Forest



classroom window during geography. Apparently, it helps to be brought up around Border collies.

'I've probably been raised as a Border collie myself,' Louise jokes, explaining that her mother bred the dogs in the Leicestershire village where she grew up. 'Then she rented some fields and began keeping sheep as a hobby – to give the dogs something to do.'

A fondness for sheepdogs is not enough, however, and it soon becomes evident that shepherding is a much more scientific pursuit than might be imagined. Happily, Louise has a degree in ecology, which she followed up with two years at the Institute of Terrestrial Ecology, 'looking at the effects of grazing on heathland' and publishing a joint paper on 'the

below-ground interactions between *Calluna vulgaris* and *Nardus stricta*'. Appropriately enough, it's her sheep that are now sorting out the above-ground interactions between these two plants, more commonly known as heather and matt grass, the short, spiky plant that gives a silvery sheen to large tracts of moor and downland. Unlike many other breeds, Hebrideans are quite content to stuff themselves with the silica-rich matt grass, thus allowing the heather to flourish again.

The road that led Louise to Sussex took a rather unorthodox route, however. It included a stint in Argentina counting guanaco ('they're a bit like llamas') and two years in the Falkland Islands, where she began a PhD examining a project to restore

eroded areas of heathland. After a falling-out with her supervisors she headed back to Britain, where an MSc in computing led her to a job with English Nature, where she settled down to a life of deskbound data-crunching. Until, that is, the day last year when she came across an advert placed by the Conservators of Ashdown Forest, the body responsible for overseeing the SSSI, for a Close-herded Shepherding Project Officer – a grand-sounding title for a shepherd.

Wanted: one shepherd

'I saw the advert and I thought "Dare I?"' Louise recalls. 'I was living in Peterborough at the time and I owned a house and it was going to be a massive change. So I thought, "Well, no harm, I'll just apply. I probably won't get it but I'll just show interest" – and I got it.'

Her ability to work sheepdogs, a skill picked up initially from her mother, meant that she was out with a hastily assembled flock of Hebrideans practically from day one. A part-time assistant has recently been taken on, but until she has been fully trained to use the dogs, shepherding remains a seven-day-a-week job for Louise.

So does that mean she spends her weekly 56 hours just sitting in a field? Louise smiles wryly: it's clear she's been asked this one before. 'I have



Local hero



very good value from its funding of the three-year project. 'We already know that sheep-grazing benefits heathland – especially Hebridean sheep – and it adds an extra dimension to mechanical management of the heathland, such as mowing. The sheep select plants that wouldn't normally grow on heathland and that adds an extra layer of management to what we do.' Those who live locally enjoy access to an improved forest without any of it being closed off. They can also apply to become volunteer 'lookers' who will be given Harry for the day and asked to check over the stock if Louise needs to be elsewhere.

The project also seems to have turned out well for the sheep. 'When I first took them out on to the heath

you could see they were enjoying themselves,' Louise says with a laugh. 'They had interesting things to eat, were trying new things and they had somewhere new to go. They said "Right, we've got a job to do now" and just started going, all of them piling in together to eat that new thing. They do enjoy it.'

The good shepherd, it is said, is prepared to lay down his or her life for the sheep. Louise hopes it won't ever come to that since the commonest danger comes from foxes around lambing time. There is, however, a mysterious predator stalking the forest, for which she keeps a keen eye. Seen but never yet photographed, a black cat – possibly a puma – is at large. For

brought books out with me and I have brought knitting out with me, but I never really get a chance to do it. The most I ever get to do is listen to Radio 4, because what I really miss is the spoken word. The most conversation I get during the day is with my dogs: I'm saying the same few words and Harry [a five-year-old Border collie] prefers chewing sticks to chatting.'

A typical day, however, remains reasonably uncomplicated. Louise gets the sheep from their overnight enclosure and takes them out into the forest with the help of one of the dogs (she uses three over the course of the day to avoid tiring them). The sheep go to work on the grasses that are suppressing the heather and at the end of the day are taken back to their inbye (fenced off) land. Then, of course, there's all the supplementary work to be done such as the maintenance of equipment, the creation of enclosures, writing reports and a blog, negotiating with local landowners, educating schoolchildren, organising and leading the terrifically popular walking-with-sheep days (some 300 people turned up for the last one), and matching up sponsors to lambs (you can name your lamb but it has to start with an A). Oh, and she also carries off the occasional prize at sheepdog trials.

With such manifold advantages, it would seem Natural England is getting



Pictured: The sheep are moved on to another part of the forest to feed. Their fondness for matt grass allows heather to flourish

the unsqueamish there are photographs of the creature's victims, sheep from nearby farms, on Louise's blog on the Ashdown Forest website (www.ashdownforest.org/blog.php).

Louise hasn't lost any sheep to the Beast of Ashdown Forest yet but she has had to endure some losses. 'It was a hard winter,' she says. 'Sheep like dying – it's their main ambition in life. They die of various things including getting stuck on their backs. We had liver fluke, which is a parasite that affects their livers, but they're all dosed against it now.'

As for perks, aside from spending a great part of every day in breathtakingly beautiful surroundings, Louise has been able to arrange for some Ashdown Forest wool to be spun up from her own flock.

'It's a pretty exclusive product,' she says. 'The ultimate luxury sheep wool blended with alpaca [there's an alpaca farm up the road]. I'm getting a jumper knitted out of it.' There's no meat to be had as yet, though. Hebridean sheep need to reach the grand old age of 18 months before they're shipped off to the abattoir and Louise, a lapsed vegetarian, is

Following the herd

- **UK** The Grazing Animals Project oversees a large number of conservation grazing schemes from Orkney to the Isles of Scilly, although none of them as yet involves close shepherding. Highlights include the introduction of English Longhorns to the 6,000-acre Epping Forest to preserve ancient trees and their related flora and fauna, and the establishment of cattle and sheep around Loch Lomond to aid botanical diversity and improve the lot of ground nesting birds. See www.grazinganimalsproject.org.uk

- **Netherlands** On the Veluwe in central Netherlands a close shepherding scheme initiated by local people has been active for the past decade. They have raised enough money to employ a shepherd to look after a flock of large white Veluwe Heideschaap sheep to maintain the heathland.

- **Germany** Close shepherding has been a way of life on Lower Saxony's Lüneberg Heath that has never been allowed to die out. Indeed, the Germans have been rather canny about it and now use shepherding to attract tourists to the area. Shepherds dress in traditional garb, while local restaurants serve meat from the heath's Heidschnucke sheep. A recent initiative has also seen cattle put on the heath.

- **Getting involved**

To apply as a volunteer 'lookerer', sponsor a sheep (it only costs £5) or to follow Louise's blog, visit the Ashdown Forest website. See www.ashdownforest.org

keen to build up a grazing flock.

The greatest perk of all, however, comes from her interactions with the public, and it is in recounting these occasions that she is at her most animated: 'There are so many people now who have come along and seen sheep out in the forest and think it's wonderful. I'm also on hand to give them the conservation message.'

Lest we forget, conservation is ultimately what the project is all about, and being able to measure its success in conserving and regenerating heathland is vital. Louise has a student lined up to set up control areas in order to compare them with grazed forest, but even if these results are promising she still has to prove it's feasible to manage a flock of Hebrideans in the forest and keep them going all year round.

The project has two more years to run. If it is demonstrated to have been a success – and the signs thus far are encouraging – it could prove the catalyst that kick-starts a number of similar schemes around Britain.

'A lot of conservation organisations around the country are looking at this as a model project to see how this kind of shepherding can work,' Louise asserts enthusiastically. As well as project funders Natural England, the impressive list includes a number of Wildlife Trusts, the National Trust and the RSPB, as well as local authorities. Louise herself is preparing to visit Cannock Chase in Staffordshire to advise a body interested in launching a similar scheme even sooner. 'The only limiting factor is having the right people to do it,' she says.

The East Sussex project could well expand after its initial three years, since, as Louise contends, 'There's nothing to stop us having two or three flocks on the forest.' If all goes well, the Ashdown Forest – famous as the home of Winnie the Pooh and friends – could also become known as the place that saw the renaissance of British shepherding. **E**

Dixie Wills, writing as Johnson P Johnson, is the author of *The Armchair Naturalist* (Icon Books, £7.99)



Pictured: Louise is training up a part-time assistant, but still shepherds seven days a week

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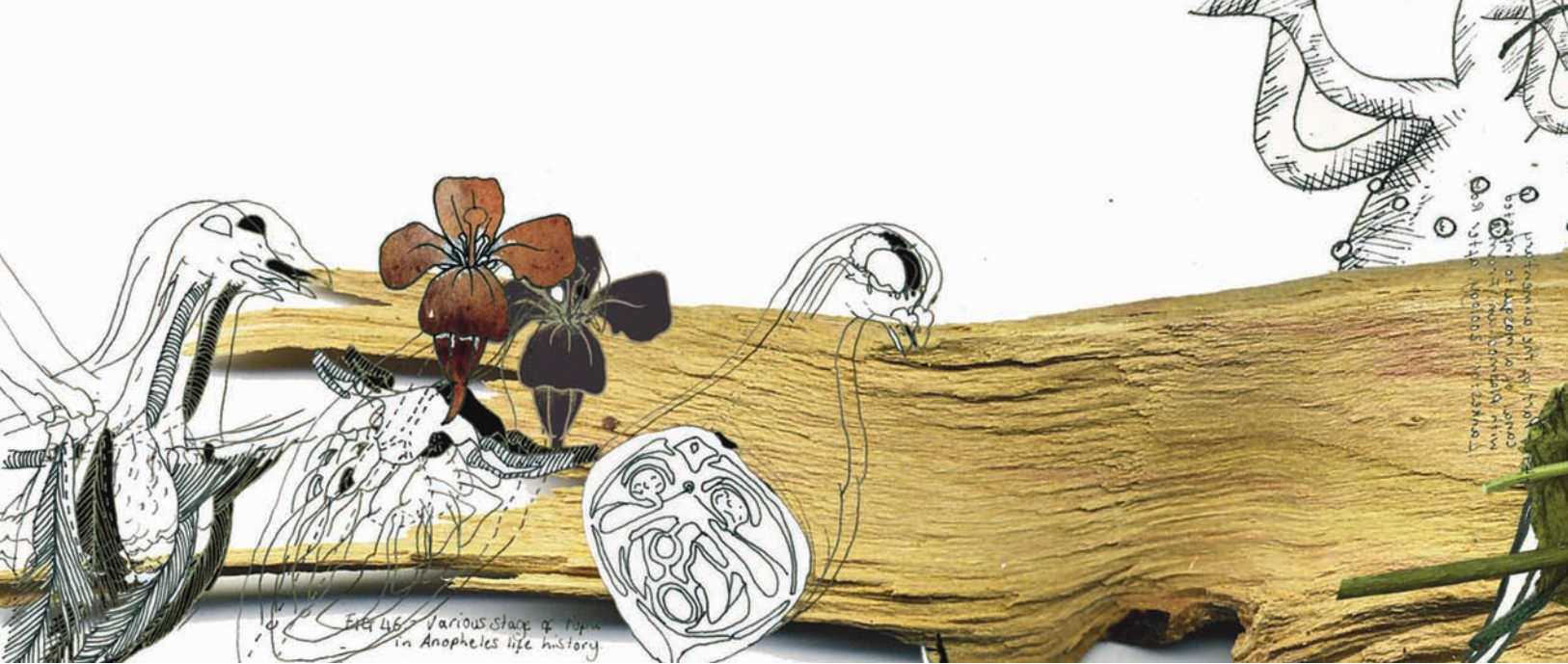
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Marauder to order

Can the restaurant trade's appetite for commercial foraging ever be sustainable? Having witnessed it first hand, **Fergus Drennan** has his doubts



Two years ago, before making good my escape, I had been lost for some time in what I believed to be a dark and depressing environmental blind alley: foraging for the London restaurant trade. The whole experience left me convinced that commercial foraging – but for one or two possible exceptions – is unsustainable; ultimately depleting our native wild plant stocks while, on a deeper level, potentially damaging the intricate connective web of inter-species dependencies that are so easily overlooked, misunderstood or understudied by wild food suppliers or foraging enthusiasts. Indeed, to me it became quite evident that to transform a wild plant into a commercial product debased both oneself and the magical essence of wild food in numerous ways.

Far from embodying the oft-repeated mantra of reconnecting with nature, foraging to order after insatiable order, driving the 130-mile round trip to London, writing invoices and crawling through congested city traffic left me feeling alienated in those natural environments that had

formerly embraced me. Within the space of a year, and in cahoots with a new and ambitious business partner, I had 'progressed' from irregularly supplying one local farmers' market by bicycle to a fat delivery driver supplying more than 11 different restaurants. Since my departure the company has grown to supply 40 restaurants. Sustainable?

My firm belief is that commercial foraging can only ever be sustainable if extremely small-scale or, within the contexts of a larger supply operation, if seeds are gathered from the wild and cultivated; that is, farmed and not foraged. So I've been experimenting. These experiments are with a view not to grow and sell wild food commercially, but rather to gain an insight into the sustainability of individuals or small groups partly subsisting on wild produce.

Prior to turning my back on supplying, and inspired by the antics of guerrilla gardeners, I had been seeking redemption in some wild guerrilla gardening of my own, deliberately sowing wild seed and propagating plants for introduction back into the environment from where they'd been collected: wild cherry, sea buckthorn,

crab apple, walnut and dog rose proving the most successful, sea kale the most unpredictable and wild garlic the most disappointing.

In an environmental revision of the notorious supermarket buy-one-and-get-to-screw-a-farmer-for-free practice, with all of these plants I'm applying the principle of harvesting from one and returning two fully established plants. After all, when less is more in the collective celebration that is sustenance living, every little helps

Actually, growing from seed helps in other ways too. For somebody new to foraging, observing plants from germination through to maturity at every stage of growth is a valuable way to familiarise yourself with them.

A cultured response

Returning again to issues of sustainability, I find myself wondering how commercial foraging might look if it were to reach maturity in an environmental manner?

Well, there may be good news. Perhaps, as a forager, the best way to resist the insatiable demands of the restaurant trade is to have nothing to do with it. Nevertheless, as indicated above, that may not



In season

Seeds – various
 Apple
 Crab apple
 Pear
 Blackberry
 Hawthorn berry
 Bilberry
 Rowan berry
 Sloe berry
 Sea buckthorn berry
 Elderberry
 Cherry plum

Damson
 Rosehip
 Walnut
 Hazelnut
 Early chestnut
 Watercress
 Chickweed
 Alexander
 Hops
 Marsh samphire
 Seaweeds – all edible varieties
 Fungi – giant puffballs, parasol mushrooms, chanterelles (and many others if wet enough)

Right: Chanterelle mushrooms have a peppery taste



Reading

How to Make a Forest Garden by Patrick Whitefield
Plants for a Future by Ken Fern
www.lammas.org.uk

Contact me

For more information or to get in touch with me, visit www.wildmanwildfood.co.uk

Sprouting seeds

Currently on postponement from my year-long wild food experiment before beginning again at square one later this year (I hurt my back and became unable to forage), I've been further experimenting with wild seed sprouting for winter salads, slowly working my way through the following list: *alexanders, angelica, bilberry, blackberry, black medick, bladder campion, broad-leaved dock, charlock, chickweed, great plantain, common orache, common thistle, corn poppy, cow parsley, crow garlic, dandelion, dittander, evening primrose, fat hen, fennel, garlic mustard, Good-King-Henry, great and lesser burdock, hairy bittercress, hastate orache, hedge mustard, hoary cress, honesty, London rocket, lovage, mallow, nettle, perennial sweet pea, rape, red clover, red goosefoot, ribwort plantain, sea pea, sea plantain, sea purslane, sea radish, sheep's sorrel, shepherd's-purse, sweet cicely, tufted vetch, valerian, watercress, white clover, wild celery, wild garlic, wild parsnip, wild radish, wild turnip, wood sorrel.*

Make your own sprouts

Take something like an old plastic strawberry punnet, make drainage holes in the bottom – enough to enable water to run out freely – then place wet cotton wool on the bottom of the container and scatter the seeds on top. Place these in a warm, dark place, such as an airing cupboard, and carefully rinse once a day to remove toxins. Germination of most small seed varieties should take place within 2-6 days. Until you're familiar with the germination time of different varieties it's best not to mix the seed, so growth occurs evenly at the same time. The seeds can be eaten shortly after sprouting, placed by a window once the shoots are a few centimetres long to green-up the young leaves, or divided and potted in soil for further growth. Some seeds will need cooling in the fridge for a week or so to mimic winter conditions and thus bring on the biochemical changes required for successful germination. It's best just to experiment.

be the only way. Much to the credit of those now running my former company, alternative thinking has finally been deployed. Working with botanist Leander Wolstenholme at the Lammas eco-community project in Pembrokeshire, west Wales, it looks as though wild food crops are going under cultivation, sown and grown according to permaculture principles. That is sound ecological practice so long as it replaces the selling of genuinely wild plants rather than supports such a practice – although whether or not restaurants will be prepared to pay premium prices for food that is not foraged and is only ambiguously wild is another matter.

Clearly, if foraging is going to be a viable (i.e. sustainable) food-procuring option, far more research needs to be carried out. Perhaps plants harvested from the wild in collaboration with Natural England as part of a sustainable land-use project is one option? Perhaps, with appropriate European funding in support of the European Convention on Biodiversity, entomologists, zoologists and botanists could collaborate to produce a huge, freely available online species-interdependency database? How enlightening it would be to type in stinging nettle to see revealed the 40 or so insect species dependent on that plant, and the birds and other animals in turn dependent on them. Ultimately we are dependent upon them all and need to know our place.



Guerrillas in our midst

Under cover of darkness, a dedicated team of activists is slowly rescuing unloved pockets of land from botanical meltdown. **Olly Zanetti** meets the guerrilla gardeners lighting up London



Loitering after dark on some of South London's dingier street corners is an activity that might initially seem to have sleazy connotations, but for one man it represents an evening's occupation of a more wholesome nature. Meet guerrilla gardener Richard Reynolds, one of thousands in the hit squad of activists who transform abandoned pockets of land into oases of colour and life.

Guerrilla gardening, says Richard, is 'the illicit cultivation of someone else's land,' and guerrillas operate, alone or in groups, all over the world (the first high-profile cases were in New York City's Lower East Side in the 1960s).

Richard's involvement stems from an instinctive love of the outdoors. From a rural upbringing where gardening was a fact of life, he moved to a flat in a tower block in London's Elephant and Castle. The odd window box aside, Richard was a 'frustrated

gardener' until he realised the solution was staring him in the face.

'The obvious thing, as I saw it, was to do the gardens immediately in the vicinity of the building, which were in a very neglected state,' he says. With no time for the bureaucratic headaches asking permission would likely bring, he crept out in the middle of the night to begin his work. The next morning, he blogged his activities.

That was five years ago, and much has changed since then. Richard is now a vociferous guerrilla gardener, and keen to inspire others. As well as a blog, his site now includes a message board through which gardeners across the world meet and plan guerrilla gardening actions – or 'digs' as they are known. With his new book, *On Guerrilla Gardening*, he hopes to widen the net still further.

For Richard, contemporary guerrilla gardening has a political edge. 'It's about our role in space

and who's in charge of it. If we're not asking permission, or even discussing it with local people, just doing it as a solo act, then that's a political statement; that's anarchistic.'

Rather than 'using plants like placards,' however, he suggests that it should be a long-term activity on what he calls 'orphaned land' – land left untended by its owners.

Whether planning a solo dig or working as a group, Richard advises selecting your site carefully. Most cities don't have much empty space, and that which does exist is likely to be earmarked for development. Instead, be creative. Roundabouts, traffic islands and roadside planters that the council has long ceased tending are the perfect targets. After all, he explains, 'I think you can reclaim the streets by gardening next to them, rather than on them.'

Having chosen the site, the next step is to enlist some help. Richard has

Guerrilla gardening



but the biggest essential is gloves.

Where you plant, of course, affects what you plant. Richard prefers plants that are not 'too showy', at least until they're well rooted, as it's not unknown for thieves to make off with choice specimens.

'Unfortunately, poor-quality soil is often a given,' he says, likening the experience of pulling chicken bones from a planter situated between a bus stop and a takeaway to a 'postmodern archaeological dig'. Similarly, the design of planters often leaves soil parched or completely saturated. 'At Kensal Green, we went for drought-resistant plants such as rosemary and lavender, which, as well as being cheap, will grow into a thick ground cover that will look, and smell, great.'

A nearby resident, watching the proceedings from a window, allowed the guerrilla gardeners to fill their watering cans in the house. Such local support is not uncommon, Richard says. 'We get many words of encouragement, but we've also been offered tea, chocolate, even soup, in the past.' Best of all, the Kensal Green site is sustainable. Lyla, a local guerrilla, passes the site every day and so is able to keep on top of general maintenance, and to call on the masses if there's a big job to be done.

In many cases, guerrilla tactics

a few gardens he tends alone, but for larger spaces such as one particular plot in Kensal Green, north-west London, the help of guerrilla gardening comrades is enlisted through a note on the website's message board. The gardeners (there are about five of them) meet at around eight in the evening.

Is this to ensure that darkness shrouds their activities in secrecy? 'No,' Richard laughs, 'it's just when everyone's finished work.' They arrive in a car stuffed with tools. 'It's great when people bring their own, but earthy garden implements are rarely welcomed on packed tubes.'

As the site, a planter on the corner of two residential streets, is covered in weeds, Richard brings a couple of forks so the earth can be turned and weeds removed. Trowels and hand forks are handy for planting,

Opposite: The team targets 'orphaned land' beside Westminster Bridge Road, in Waterloo
Below: Guerrilla gardener Richard Reynolds with the tool of his trade

alone are satisfactory, though if you want them to they can lead to formalised community gardening. Discussing the gardens around his own block, Richard says: 'I don't want to be a guerrilla here forever. I don't want to risk my gardens being mucked up by the council or lose out on funding I could potentially get as an official volunteer.' A council representative in Southwark, where Richard lives, is quoted as saying he 'wishes there were more Richard Reynoldses.' While the borough's tacit authorisation for his gardening is generally forthcoming, however, even after several years they are loath to put it in writing.

Theoretically, guerrilla gardening is criminal damage, though most police officers, while incredulous, tend to turn a blind eye to proceedings. Richard, however, still smarts from the band of overzealous officers that recently demanded they down tools or face arrest. The gains far outweigh the risks, though, and, as Richard observes, the potential is massive. So, as he says, 'if you want a garden and you want to improve the space, the simplest thing is to just go and do it.' **E**

Olly Zanetti is a freelance journalist. On Guerrilla Gardening (Bloomsbury, £14.99) by Richard Reynolds is out now

Guerrilla Gardening for Beginners

A quick solo dig, where you scatter a few seeds or push a couple of bulbs into the ground is fairly easy and can produce great results. If you're planning something on a larger scale, Richard has these tips:

- Visit the site first. Check out the soil type, drainage, light, wind and so on, and plan your dig accordingly.
- Plants need to be hardy to tolerate exposed urban life. Lavender, which thrives in poor, dry soil, is a good choice.
- Seeds and bulbs are cheaper than fully grown plants, or you can mature cuttings at home first. Local garden centres may offer a discount on plants no longer flowering if you explain what you're doing.
- Don't be self-conscious. When people ask, explain what you're doing, and ask if they'd like to pitch in!
- Good gardening kit makes the job easier, but is not essential. Do get strong gardening gloves, though – for pulling up weeds and picking through litter.
- Go to www.guerrillagardening.org to find out what's going on in your area, but don't be afraid of going it alone.



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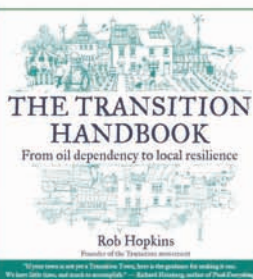
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Hemp on the high street?

It's versatile, environmentally friendly and has a 5,000-year-old pedigree in the fashion world. **Laura Sevier** can't understand why it's taken so long for hemp to hit the shops

Not so long ago, while browsing in shop near to our office in East London, I was asked by a curious shop assistant: 'Are you an environmentalist?'

'What makes you think that?' I replied, keen to know what it was that gave it away. He said it was a combination of factors: rosy cheeks, scruffy shoes and my hemp bag. While I don't consider his first two observations to be obvious badges of environmentalism, he was right about the hemp. It was my (much-loved and frequently used) 'Real Eco Bags Are Made From Hemp' bag that marked me out as a greenie. Unlike organic cotton, hemp in its rough and raw state has a distinct, easily recognisable personality, one that has long since been linked with hippies and eco warriors. Organic cotton is now trickling on to the high street, however, while hemp clothing is still relegated to the margins, only worn or carried by the fanatical few who are forced to buy it from online stores.

So why is hemp not taken more seriously when its potential as a sustainable, low-impact eco textile is enormous?



Pictured: Hemp jacket designed by Katherine Hamnett for BioRegional



Left: Sue and Emily of BioRegional cut down hemp of 5m and above
Inset: Hemp blended with viscose – spinning trials in Huddersfield
Below left: The plant can grow to heights

A true wonderplant

As a crop, hemp grows thick and fast (up to 10ft in a year), shooting out leaves that smother surrounding weeds. Insects don't seem to bother it, meaning it can be grown without pesticides, and because the plant's roots penetrate deep into the ground, drawing up to the surface minerals buried in the soil, little or no fertiliser is required. In essence, hemp is a low-input and low-impact crop that is easy to grow organically and which actually benefits the soil, enriching it with nutrients (making it an ideal break crop to be grown in crop rotations). Hemp is not as thirsty a crop as cotton. It does not generally require much irrigation – if any – because its long tap roots are efficient at extracting water from deep in the soil.

Hemp can be grown in areas where cotton can't – anywhere in the world. On the same amount of land it is possible to produce three times the amount of hemp fibre as cotton. UK-grown hemp could cut down on clothes miles, provide an alternative to importing cotton, create employment and reduce the UK's dirty clothing footprint on other parts of the globe.

As a fibre hemp 'breathes', keeping you cool in hot weather, and it is soft, comfortable and yet hard-wearing. It also blends well with other fibres, such as silk or organic cotton.

As various eco designers, including Enamore and THTC, are proving, hemp doesn't have to be relegated to the baggy vests and draw string trousers either – it can be cool, sexy and hip.

So what are we waiting for? Why



aren't we seeing more UK-grown hemp on the high street? Since 1993, when it became legal to grow it again, hemp has been cultivated on approximately 2,000 hectares every year, but this is mainly to produce animal bedding, cigarette paper pulp, fibre and recyclable car interiors. Most of the hemp clothing available in Britain is produced in China or Eastern Europe.

There are signs that this could be about to change, however, if the efforts of one company bears fruit. BioRegional (of BedZed fame) is an independent environmental organisation that develops sustainable products and services, and which has invested eight years



of research in hemp textiles. Along with Hemcore, the UK's largest hemp-growing organisation, and with help from the University of Leeds and funding from what was formerly the Department of Trade and Industry, BioRegional has been pushing to get UK-grown hemp textiles back on the market.

The project involves 1,214 hectares of hemp fields grown by 50 different farmers, mainly in south-east England. Climatic conditions in the south-east, where BioRegional is based, are the most suited to growing the crop. As a result of its practical trials, BioRegional succeeded in producing what is probably the first machine-processed, UK-grown, 100 per cent hemp apparel fabric this century, later made into a lightweight summer blazer by Katharine Hamnett.

Main picture: Hand-coloured, double-knit hemp yarn from House of Hemp

Bottom right: Hemp leaves. 'Industrial hemp' contains few narcotic chemicals

'In the short term it would be possible to establish hemp textile production in southern England to produce high-quality hemp yarn and fabrics at a similar cost to linen,' says Sue Riddlestone, director of BioRegional. 'However, if hemp is to be grown and processed in cooler climates or at a more competitive price, various technical problems would need to be overcome.'

Hurdles to hemp

The first obstacle is weather-related. Once the hemp has been cut it needs to be laid out on the ground to allow the natural fungi and bacteria to loosen and separate the bast fibers from the woody core. (Hemp, like its close cousin flax, is a 'bast fibres' plant, meaning the fibres are contained in the stem). For this process, known as 'dew-retting', the conditions need to

be just right – not too dry and not too wet – or the hemp goes mouldy. If the weather isn't right the whole crop can be lost.

'What we really need is a processing system that works for farmers,' says Sue. 'A way to process hemp that makes it economically viable, that is suitable for our temperate climate or bypasses the need to depend on the weather.' There are other ways to ret hemp but these carry their own set of problems. In Eastern Europe they often use retting ponds, for instance, which result in polluting effluents.

Then comes the problem of actually extracting the fibre from the stem. Adapted flax machinery can be used but it is not entirely suited to hemp, which is strong and hard-wearing, and has been known to get tangled up in tractors and mills. Hemp requires a larger, more robust machine – a problem that could rapidly be solved if the market demands the final

The highs and lows of hemp

For over 5,000 years people have grown hemp for its fibres and the nutrients contained in its seeds.

- In the 16th century hemp was grown by every farmer in the UK by order of an act of parliament introduced by Henry VII to ensure the supply of sails and ropes for Royal Navy ships. Farmers who failed to grow the crop were fined.
- During the first 40 years of the 20th century, approximately 2.5 million acres of land were devoted to hemp production. In World War II, hemp was used to make American soldiers' uniforms. It is said that the first jeans, manufactured by Levi Strauss, were made of hemp.
- The once-major hemp textile industry has now almost wholly disappeared as it is to compete with cotton imports and synthetics – as well as to shake off its association with narcotics. Hemp is *Cannabis sativa*, the leaves and flowers of which are a well-known drug. However, since low-narcotic

cannabis varieties have been developed a number of countries have permitted the cultivation of this 'industrial hemp', which contains so little THC (tetrahydrocannabinol – the psychoactive chemical in cannabis) that you'd need to smoke a joint the size of a telegraph pole to get stoned.

- More than 30 nations currently produce industrial hemp, including Australia, Austria, Canada, China, the UK, France, Russia and Spain.
- It is illegal to grow hemp in the United States without a special permit from the US Drug Enforcement Administration (DEA). The situation is changing, however: eight states have removed barriers to producing or researching hemp, and others have introduced legislation (see www.votehemp.com).



product. They've looked at the possibility of stripping off the fibre with machines in the field, but then the fibre contains too much moisture and would need to be quickly treated or stored to prevent degradation. As well as being expensive it doesn't necessarily result in a better-quality fibre.

So far, so tricky, but if Hemcore, BioRegional's project partner, can manage successfully to produce hemp fibre on a commercial scale, why can't this be used for textiles?

'They produce fibre suitable for non-woven applications such as car parts and building insulation,' says Sue. 'Some of our recent work has focused on methods to upgrade this "composite grade" fibre from Hemcore to a finer, textile-grade fibre through the use of enzymes or chemicals.' In China the fibre is boiled in caustic soda – a fairly standard chemical – and it's one of the best ways to produce the finest fibre, but BioRegional wants to create a system that uses less energy, water and chemicals.

The obstacles don't end there,

25,000 uses

There are an estimated 25,000-plus uses for hemp, including everything from mushroom compost and machine-part lubricants to nets, nappies and superfood salad oil. It is one of the most versatile plants on the planet. With multiple co-products, nothing goes to waste.

The 'bast' fibres are used to produce textiles, twine, geotextiles and paper; the woody core – or hurds – are also fibrous and can be used for animal bedding, making paper or in building materials. Hemp seed is used for fish, bird or human foods, or for oil production.

though. Next, the fibre needs to be spun. In 2004 there were only three short staple spinning mills in the UK – now there is only one left and that may cease spinning very soon. Hemp could also be spun using the wool spinning system, but as there is an issue with hemp fibres contaminating

Below: Designer Jane Pasquill uses hemp yarn (bottom right) grown and processed in Europe to create hemp clothing and accessories such as this blue hemp and silk woven scarf (bottom left)

the spinning mill it is difficult to gain support for the project and difficult to carry out trials. The good news is that BioRegional foresees no particular problems in commercial weaving, dyeing and finishing the hemp fibre.

So the key is to find a way of harvesting and processing the hemp to produce a fibre of the right quality and price, and to find mills that are willing or able to spin it. 'If it can be processed, spun and woven in the UK there would be increased commercial potential for hemp as a mainstream clothing fabric,' says Sue. 'We haven't found the answer yet, but we don't want to give up on it.'

Emily Stott, BioRegional's hemp textiles project manager, also remains determined. 'We'd like to see hemp on the high street, as a mainstream fibre that can be blended with other fibres. We want people to take it up more widely,' she says. 'After all, hemp has a much lower ecological footprint than cotton, and far lower than polyester. Organic cotton is okay, but there is not enough around.'

BioRegional is not alone in its quest. With research projects in Italy, North America, Canada and New Zealand, Emily says in the next five years we'll be seeing a lot more of hemp.

It looks as though it will be a few years before we'll be able to buy UK-grown hemp jeans but we can help the cause by generating a market for the products. I for one will continue to carry my hemp bag with pride. **E**

For further information, see www.bioregional.com and www.eiha.org

Haute couture hemp

My hemp yarn has been grown and processed in Europe without any pesticides or herbicides. It's spun using potato starch liquid instead of a petroleum-based substance that many spinners use to ease the action. The end result is a fibre that

is natural and retains its lustre. The main difference between linen (flax) and hemp is the natural lustre, or shine. Linen has to be buffed to create the shine. Our customers, for the most

part, thought hemp would be like rope. Our challenge was to create designs to show the possibilities provided by using hemp yarn.

We have worked with all the craft disciplines to help people understand the possibilities of this beautiful fibre (weaving, knitting, crochet, lace-making, braiding).

I have been collaborating with designers for many years to help establish an interest in agricultural hemp being grown in this country. We require a UK processing plant to supply fibre for the textile industry... as well as an investment in the textile industry. It's time for the UK to re-establish its work in textiles.

**Jane Pasquill, designer,
House of Hemp**



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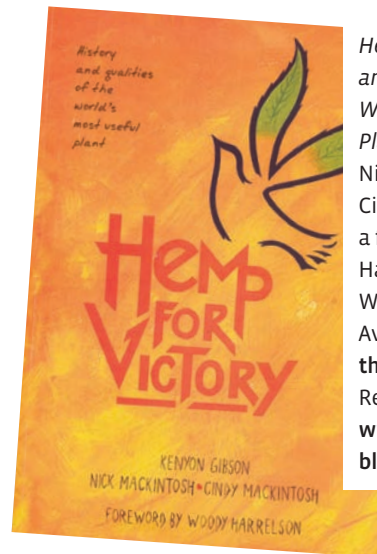
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Hemp for Victory: History and Qualities of the World's Most Useful Plant, by Kenyon Gibson, Nick Mackintosh and Cindy Mackintosh, with a foreword by Woody Harrelson, £17.95, Whitaker Publishing. Available from www.thehempshop.co.uk Read Kenyon's blog at www.hempforvictory.blogspot.com



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Hemp, health and fatty acids

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- It also contains the perfect ratio of omega fats 3, 6 and 9, which are vital for healthy skin and circulation, cell growth and the immune system. Foods containing omega-3 essential fatty acids help maintain optimal brain function. There is also evidence to suggest that boosting intake can relieve depression.
- Avoid cooking with hemp oil. Highly unsaturated vegetable oils are denatured by heating above 180°C (300°F), causing the oil to oxidise and become rancid. Keep bottles tightly sealed after opening and store in the refrigerator or freezer.

Body and skincare

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- In shampoos and conditioners, the oil's fatty composition helps relieve a dry, itchy scalp. Hemp oil's lipids make hair more manageable, add body and enhance shine.

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A small family firm based in West Sussex, Cocoa Loco makes and bakes its chocolate delights by hand. The range is certified as organic by the Soil Association and the chocolate is ethically

traded, sourced from CONACADO, a Fairtrade Cocoa Cooperative in the Dominican Republic that consists of 9,000 small-scale cocoa farmers. This year Cocoa Loco has launched an organic and Fairtrade range.

Cocoa Loco is concerned about the ethical and environmental impact of their business. For example, its approach to recycling has cut the company's weekly waste down to the equivalent of a standard domestic dustbin going to landfill each week. It also looks to source from ethical companies such as the Phone Co-op (which provides its telephone and internet access.)

To order, go to www.cocoaloco.co.uk and use the code **ECOLOGIST during the checkout process. If you don't have internet access, call 01403 865687 and quote 'Ecologist reader offer'. Offer valid until 30/11/08.**



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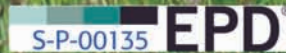
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Finance

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Holidays

There are plenty of ways to take a planet-friendly break and be an ethical traveller, from staying in a yurt in Devon to ecotourism holidays that benefit local communities and the environment. See below to find out about places in the UK and abroad where you can holiday with a green conscience



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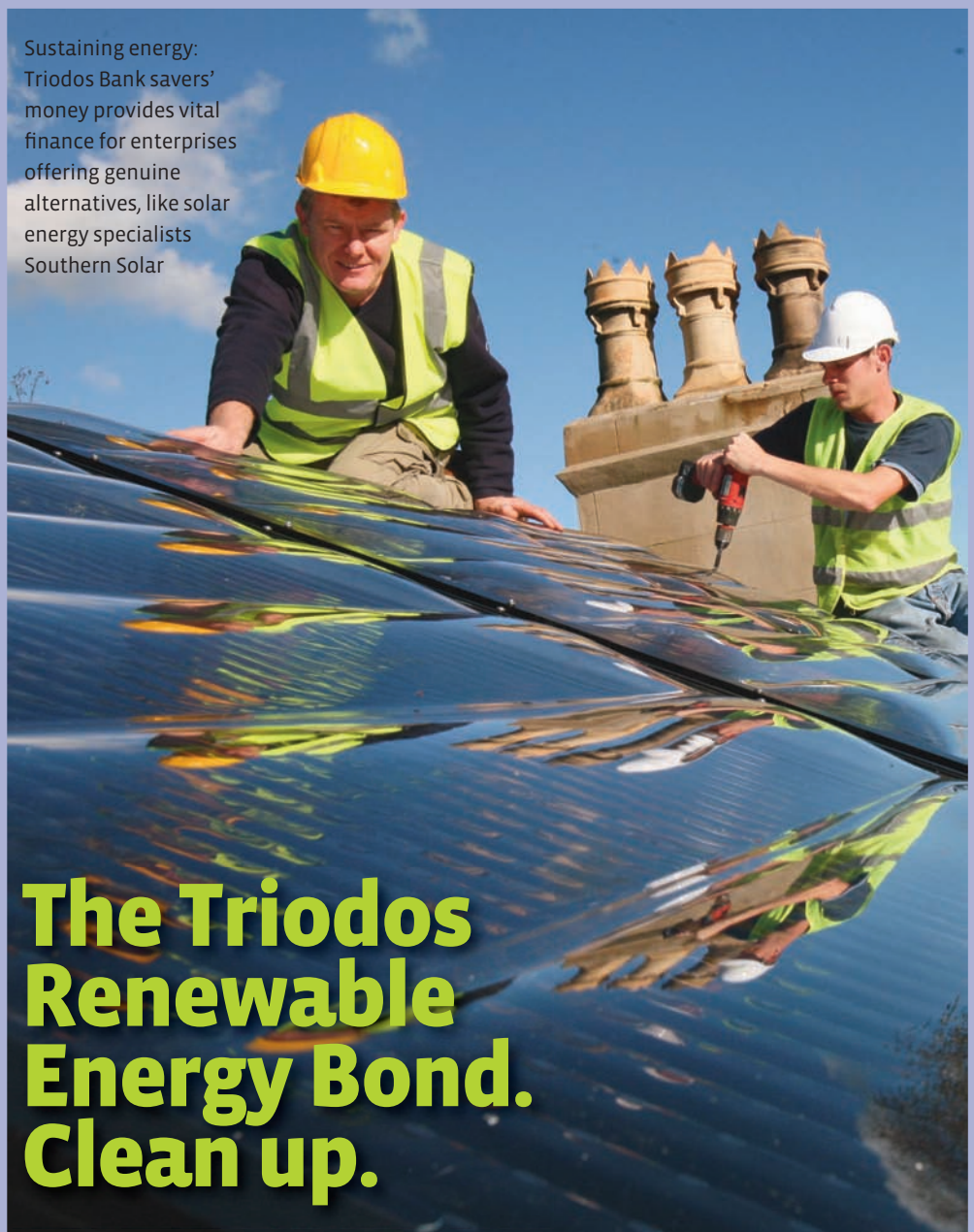
A transparent approach

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- The Centre for Alternative Technology
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This year, we are marking the **30th Anniversary** of **Fritz Schumacher's** death, and we are doing things a little differently. Not so much a 'line-up of Lecturers' as a great sharing of new ideas from passionate **advocates for change**, **outspoken controversialists** and a dozen **leading practitioners** – the people making change happen on the ground now. Our theme ("Less is More") goes right to the heart of today's debates about climate change, worsening injustice, peak oil, the credit crunch, food security, health inequalities, resource wars and so on.

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Out of the labyrinth

In a world controlled by supermarkets and stuffed with substandard food, which way do you turn for the truth? **Ed Hamer** discovers a thread that leads towards enlightenment

'Each of us is entitled to our own opinion on anything and everything, and these writings may be considered to be no more than my opinion.' So begins Robert Elliot's comprehensive evaluation of the state of British food and farming today. Prompted by the experience of running a 'real food' B&B in rural Herefordshire, Elliot guides us by the hand through *The Food Maze* on a literal and culinary journey across the British landscape. Using the evidence displayed, from views of our changing countryside to advertising hoardings and motorway service stations, Elliot reflects on the ways in which our most vital of resources has been reduced to a commodity in a global marketplace.

The Food Maze sets out by addressing some of the more familiar consumer concerns surrounding industrial farming, processing, packaging and the power of

supermarkets. Using everyday, identifiable examples, each of these issues is explored in depth to give the reader an immediately accessible guide to the workings of modern convenience culture. Despite claiming to be 'neither a scientist, a doctor or a nutritionist', Elliot bravely tackles the complex world of nutrition and changing consumption patterns, and their knock-on effects on the health of the nation and our environment. The final section of the book offers an exit strategy worthy of a government White Paper, outlining a 10-point plan to wean even the most die-hard of supermarket shoppers off the conveyor belt.

Robert Elliot has been gifted with the intellect of a professional and the voice of a layman, but what he may be lacking in qualifications he more than makes up for with dedication to research. Far from being

a repetition of the daily commentary in the mainstream press over the declining state of school dinners, animal welfare and British farming, *The Food Maze* brings these often misunderstood issues together in a clear, logical and well-reasoned argument for a return to real food. Although this may be no more than Elliot's own opinion, the reader is left quite simply wondering whether there is any need for an alternative.



The Food Maze: And How it Conceals the Truth about Real Food

Robert Elliot
(Real Life Books, £9.99)

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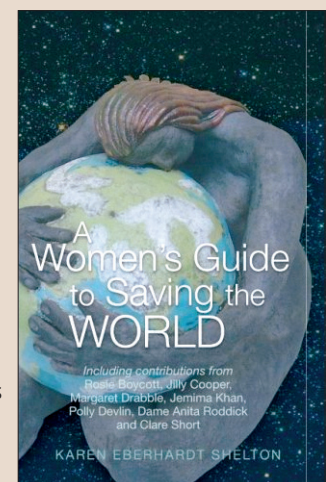


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LITERATURE

A Women's Guide to Saving the World Edited by Karen Eberhardt Shelton

This is a collection of short entries by 83 different women, from campaigners to homemakers to politicians, with names both familiar and unfamiliar. While some entries are better written than others, overall this book offers a collective genius, as it is rich in wisdom, the kind that comes from reflection and experience. I found myself nodding in agreement while reading some stories, and surprised by something new while reading others. It is an empowering book, written by women for women, and as such is an affirmation of the unique role that women play in maintaining, protecting and nurturing all living things in this world. That the journeys taken and viewpoints expressed in the book are so varied is another testament to the particular strength of women in adapting to the world around them. In our atomised society, this collection of voices rings out with a rare and forceful harmony. **Matilda Lee**



Lexicon of légumes

In the beginning was the word, and the word was 'organic'. Redemption for ethical shoppers is at hand, says **Phil Moore**

Renowned nutrition expert and 'diet detective' Judith Wills's newest food guide, *The Green Food Bible*, is an extremely comprehensive and well-researched lexicon about 'green' food.

Her book covers all ethical and organic ground imaginable, making it perfect not only for confirmed organic food experts, but also for novices who are daunted by the sudden push towards food awareness and ethical food buying.

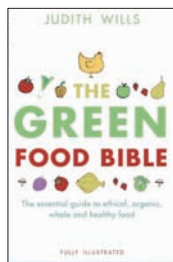
Everything the ethical shopper needs to know is neatly catalogued and made easy to understand, with many eye-opening facts, which emphasise how crucial responsible buying really is.

Wills presents us with up-to-date information about all the major supermarket chains and fast-food restaurants, while at the same time explaining how to have a well-stocked organic larder that is as easy on your conscience as it is on your wallet.

For inspiration in the kitchen, her seasonal recipes will provide all the encouragement you need, and are not your usual organic

fare: in summer, try fresh crab with chillies and spaghetti, or in autumn, how about mussels in beer? When buying, her A-to-Z of green food provides all the information needed to fuel your new penchant for organic, ethical cuisine.

The Green Food Bible succeeds in making the reader not feel limited or discouraged, and if read by a wide audience could have an enormous impact on the way British shoppers see the food they buy, with long-term effects not just beneficial to our health, but also our planet. With regard to the current state of affairs, Wills' book couldn't have come at a more crucial time.



The Green Food Bible – The Essential Guide To Ethical, Organic, Whole and Healthy Food

Judith Wills
(Eden Project Books, £15)

FILM

The Age of Stupid Franny Armstrong (Spanner Films)

I'm sorry, I'm going to gush: this film is a fantastic achievement.

In a remote Arctic library, in a climate-ruined 2055, an archivist (Pete Postlethwaite) sits down amid the collected remnants of civilisation to create a memoir using footage from the 'past' 50 years. This framework allows director Armstrong (of McLibel fame) to tell six different, bang-up-to-date climate change stories – including that of an oil worker whose home was decimated in Hurricane Katrina; that of Jeh, founder of India's first low-cost airline, and that of Piers, a wind farm developer trying to live sustainably.

Interspersed with animated sequences detailing everything from consumerism to the Iraq war, the film builds a picture of climate change that simply couldn't be told through any other medium. In some inspired footage, the director allows anti-wind farm campaigners to explain why they object to a new development, shortly before their town is flooded in last year's unseasonal summer weather.

Sure it's not absolutely perfect: Postlethwaite's dialogue is a little overwrought and his dystopian setting over-egged, but hell – Al Gore won an Oscar for interspersing a slide show with shots of himself in a plane with a laptop. This film knocks spots off *An Inconvenient Truth* and well deserves the cinema release its crew are hoping for. **Mark Anslow**

Not yet on general release. For the latest information, see www.crudemovie.net



Last words? Itelmen

Status: Extremely endangered – only a few dozen elderly speakers left.

Habitat: The isolated and scattered villages of the western Kamchatka peninsula in Russia's far east, facing the Okhotsk Sea.

Description: The rise of the Soviet Union and the centralisation it brought irrevocably damaged the linguistic heritage of Asia's vast continent. As the state oppression of hundreds of years accelerated (the first things to go, in the 18th century, were their names), Itelmen children, along with those of many other ethnic minorities, were forced to attend boarding schools and speak Russian. With such pressures, the transmission of Itelmen from parents to children ceased several decades ago. Now, despite revival efforts, it is really a language for the old, the relic of a previous age.

'Itelmen' means 'human being', and they describe themselves as 'native inhabitants of dry land'. By tradition they were fishermen, fur-hunters and renowned herbalists. The language appears to be an isolate, unrelated to any other tongue. Itelmen's grammar is intricate, with a 12-case structure and complex consonantal clusters. The beginnings and endings of words alter depending on person, tense, mood and so on. It also includes a vowel sound unfamiliar to us: *schwa*. There is much reduplication in the language: for example the words *atx-atx* – 'light' – and *silq-silq* – 'meat with berries', a staple in those latitudes.

Another factor in the decline of Itelmen has been its readiness to absorb loan-words and ideas from other languages, a sort of verbal counterpart of the intermarriage that has occurred. This linguistic evolution swiftly becomes erosion if the outside forces are stronger than a language's own centre of gravity. Sadly, it seems the *shazki* (stories) of these people will be absorbed into the silence of history.

David Hawkins

How to be free

Endogenous growth theory

In subjugating nature, modern society dehumanises itself. Our gardens and allotments can help us rediscover who we really are, says **Tom Hodgkinson**

The more I think about it, the more sense it makes: gardening will save the world. For in a garden is truth, beauty and lots of good food. Harvesting the potatoes in our vegetable patch today, I couldn't help reflecting once again on the miracle of nature, how one seed can reproduce itself many times over. One small seed potato turns into many large potatoes. One pea grows into a cascade of flowers and pods, and the peas can be eaten straight from the pod, nature's own M&Ms.

Really, the good gardener does very little: he simply wanders around and tries to provide the right conditions for each plant. Ninety-nine per cent of the work is done for you by nature: the rain comes, the sun shines and the seeds do their absolute best to grow up and make flowers and fruit. The best gardeners refrain as far as possible from interfering with the natural process.

In a world in which increasingly we are disconnected from nature by technology, gardening is a very simple way of reconnecting. It is immensely therapeutic, and deeply satisfying. It is a fantastic antidote to the busy culture that we have found ourselves in. Gardening offers myriad opportunities for reflection and contemplation: I often find myself simply leaning on the fence, staring at the crops. With a garden you don't need to subject yourself to routine and cost of meditation classes or yoga; just wander up there and you will meditate naturally.

You could make the same argument for Africa: gardening will save it. Instead of useless and costly aid projects, with bumptious aid workers zooming around in brand-new white Land Rovers and Toyota Land Cruisers, doling out American pharmaceuticals, there needs to be a return to subsistence farming – and this, in fact, according to Paul Theroux in his brilliant *Dark Star Safari*, is what tends to happen after the aid workers have gone back home to display their compassion to their

friends. Feed the soil, sow seeds, cultivate your garden, as Voltaire advises in *Candide*.

The American dream is that technology – and more money; always more money – will save the world. Technology: for which read man's own ingenuity; his battle, in a sense, against nature. Since the days of Thomas Hobbes, who famously described life as 'nasty, brutish and short', American Enlightenment thinking has been making efforts systematically to remove us from messy nature, to conquer it, through military and industrial means. Still today, despite the overwhelming evidence to

the contrary, there are techno-futurists in the mode of HG Wells, who still believe money and technology will be the means through which we create a utopia. Hence we spend money, energy and creativity on vanities such as space travel, pharmaceuticals, cars, lightbulbs, computers, mobile phones, the BlackBerry, Viagra, Prozac, the internet, email, skyscrapers, oil extraction, plastics manufacture, television, Hollywood, secondary education, roadbuilding, air travel, holidays, second homes – when it would be much easier and cheaper simply to concentrate on giving ourselves each a garden to tend.

The vanities of the modern world have another unpleasant side effect: in promising a better tomorrow, they remove us from the present moment. Gardening roots us firmly in the present and doesn't care about past or future. It is the now.

Gardens bring pleasure, satisfaction and nutrition. Each is unique to its owner: there are no two the same in the world. So when our high streets are homogenised, our cars all look the same and everyone all does the same thing, drinks Stella, wears jeans and hoodies and sits in front of the telly, the garden offers us an outlet for our own unique creativity. The garden is also a grove, a place for quiet contemplation and reflection. Add to this the fact that gardening is undeniably useful, as it provides cheap and delicious food for the family, and you have a real win-win combination, a genuine panacea for today's ills.

Tending your own plot also returns creativity, pleasure and autonomy in work to your life. Most jobs are uncreative, boring and afford little control over your time. They are profoundly unsatisfying. They certainly lack beauty; workplaces tend to be horribly ugly.

But feed the soil and sow seeds, and you will feed your self and your soul into the bargain. **E**

Tom Hodgkinson is the Editor of *The Idler* and author of the book *How to be Free* (Hamish Hamilton, £14.99)



'The American dream is that technology – and more money – will save the world. Technology: for which read man's battle against nature'

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