
Fall 2004
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Hunter Lovins
prospecting for an
energy future
can we live
without
oil?
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Issue #31

Martha van Gelder

# Dear Reader,

My dependence on oil came into sharp focus as I worked on this issue. Driving a car (one with good gas mileage, but that still burns fossil fuels); heating my home with oil—those are the more obvious signs of my reliance on petroleum. But I now see that petroleum products permeate every aspect of my life, from the petrochemicals that make industrial agriculture possible to the plastics that make up the keyboard I'm using.

Can we live without oil? Can I?

Like it or not, I'm realizing that before long, we're going to have to learn how to live with a lot less. This is true for several reasons, any one of which would be motivation enough, but together, the picture is stark:

- Scientists, normally wary of emotional appeals, are issuing alarming warnings about the dangers of climate change.
- The war in Iraq is not going well, and the continued use of military force to guarantee access to oil supplies is deeply problematic.
- Exploration and exploitation of oil supplies continues to degrade what remains of pristine habitats and the lands of indigenous peoples.
- Production of oil is at or near its peak, and even the most optimistic estimates say production will begin an inexorable decline within a generation. Meanwhile, consumption continues to rise, notably in the U.S. and China. It is difficult to imagine that oil will remain cheap and available as this gap between supply and demand widens.

The age of oil may well be coming to an end, and the transition will not be easy. We may have to give up much that we have become accustomed to, not because doing so is politically expedient—it is not—but because the Earth can provide only so much.

Thom Hartmann points out that other civilizations have collapsed after exhausting their primary energy sources and running out of ways to conquer other peoples'. (See page 12.)

Since this is an interconnected world, this collapse, unlike previous ones, could affect the entire globe. But our interconnectedness also means we can draw on a wider range of capacities and wisdoms as we make the transition to a post-petroleum world. Our way of life in such a world will change—but it may be a change for the better.

If we were to embark seriously on a campaign to achieve energy independence through renewables and efficiency, as the Apollo Project proposes, millions of jobs would be created that could not be uprooted and sent abroad (see page 45).

We in the United States could begin mending a damaged international reputation by taking responsibility for our contribution to climate change and by moving away from a foreign policy driven by oil dependence.

We could stop degrading indigenous peoples' lands and waters and instead support their move to wind production (see *YES!* Summer 2003).

We would be safer. Renewables and energy efficiency measures are decentralized and less vulnerable to attack and to Enron-style market manipulation. (Try picturing a terrorist plot against energy-efficient light bulbs or solar collectors!)

We may re-localize our economies as the energy costs of shipping create a bias for local and regional production. Perhaps we'll travel less frequently, but stay longer to savor the experience.

We might have to abandon the failed dream of suburbia, which rests heavily on over-consumption, automobiles, and loneliness, and reacquaint ourselves with life in towns and cities, embracing them as they do in Europe. We might rediscover a sense of community and a sense of place, and see that our wellbeing relies not on the compressed remains of ancient organic matter, but on the water, sunlight, wind, and soils of our immediate environs.

We know a lot about why we must act, what to do, and how to do it. The question that will determine the sort of world our children's children inherit is a simpler one: will we choose to do what needs to be done?

Sarah Ruth van Gelder
Executive Editor

Yoshikazu Tsuno/AFP/Getty Images

In a time of drastic change,
it is the learners who inherit the future.
The learned usually find themselves
equipped to live in a world
that no longer exists.

Eric Hoffer

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***YES! A Journal of Positive Futures*** (ISSN 1089-6651) is published quarterly for $24 per year by the Positive Futures Network at 284 Madrona Way NE, Suite 116, Bainbridge Island, WA 98110-2870. Periodicals postage paid at Seattle, WA and at additional mailing offices. **POSTMASTER**: send address changes to *YES! A Journal of Positive Futures,* PO Box 10818, Bainbridge Island, WA 98110-0818

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# can we live without oil?


Yoshikazu Tsuno/AFP/Getty Images

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J.Kamien/UNEP

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# readersforum

Tell us what you think of the ideas you find in *YES!* by writing to
*YES!* Magazine, P.O. Box 10818, Bainbridge Island, WA 98110
or visit our website at www.yesmagazine.org

### Dr. Seuss' Wisdom

I'm so swamped I decided I had to cut down on the 40-plus magazines I try to skim every month. But then I read your summer issue and decided to order extra copies of it so I can give it away to others.

**Pete Seeger**
**Beacon, New York**

P.S. I especially like the short pieces. As Dr. Seuss said, "If you want your words to carry great strength, write them with shorth. Shorth is better than length."

### Population Is a Crisis

Pramila Jayapal's "The Mother of Exiles" (Summer 2004) does not address the main reason most Americans are against immigration, both legal and illegal. In the words of Worldwatch Institute, "Sitting quietly in the corner is an 800-pound gorilla. Its name: Population."

**Val Don Hickerson**
**Bandon, Oregon**

### Brit Tzedek Grows

In "Jewish Group Issues Call to Bring Settlers Home" (*YES!,* Winter 2004), Janis Siegel wrote that in 2003, 8,500 American Jews had signed the petition initiated by Brit Tzedek v'Shalom, "crossing all ranks and denominations ... from Reform and Orthodox Jews alike."

I assure readers that the spectrum of American Jews, including those who signed the petition, is much broader. Reconstructionism is Judaism's fourth largest denomination. Others belong to a movement called Jewish Renewal. Still others, like me, belong to groups that practice secular, humanistic (some call it "cultural") Judaism. The descriptors don't end there.

Ten thousand signatures on that petition were presented to Bush and Sharon at their spring 2004 meeting in Washington.

**Bob Jacobson**
**Baltimore, Maryland**

### More on the Good Life

Achieving the good life means knowing myself well enough to know what nurtures me and what does not. I need to know what I am really hungry for. What do I need in order to feel content with who I am and what I do? For me the list has come to look, in part, like this:

First, faith that the good life is available to me.

A piece of earth where I can plant, get my hands dirty, and watch seasons evolve.

Work that helps others and challenges my potential, and sufficient influx of information so that I am always learning, seeing from a new perspective, and making connections.

Living space large enough to allow me to function in my day-to-day life, but small enough to encourage recycling and letting go.

A small handful of intimate (human) friends and some animal friends making demands on me (and entertaining me), thus forcing me out of self-absorption.

Enough cash flow so I can treat myself (and knowing what treats really nourish me) and am able to support others by buying the nourishing/beautiful things they have created.

Finally, living so my actions are in alignment with my principles, a connection with my past, and a belief that I am making a difference.

**Rebecca Adler**
**Oceano, California**

### *YES!* and the Film Connection

In the Summer 2004 issue, The Film Connection teamed up with *YES!* to offer readers films—*Affluenza, City Farmers,* and *Livable Landscapes*—related to the *YES!* theme of the good life. We also encouraged readers to form film groups of friends and family to watch great film, and then enjoy an evening of conversation about the good life.

It turned out to be an exciting venture with *YES!* Readers across 14 states formed film groups and hosted film evenings and discussions with friends and family. *YES!* film groups have come back to The Film Connection many more times to check out other titles from our film library, including *Enlightenment Guaranteed, Men with Brooms, The Fast Runner,* and more.

**Jennifer Clapper, Film Curator**
**The Film Connection**

*Editors' note: The partnership continues. See page 50 for this issue's suggested film.*

### Stay Positive

It pleases me to see a group of people who at least on the surface are not absolutely depressed out of their minds over the direction in which we are currently being led. Stay strong!

**Bill Habel**
**Salt Lake City, Utah**

# Readers take action

## How are you and others taking action to create a more positive future? Here are your stories. . .

### Citizens Network

The Citizens Network for Sustainable Development (CitNet) has launched its Leadership for Sustainability campaign to focus attention on sustainability and convince the nation's leaders and citizens to make sustainability a high priority. For the election, the goal is to make America's sustainability a priority for candidates and voters.

The Leadership for Sustainability campaign calls on citizens, public leaders, and candidates for office to do their part to raise awareness about what is needed to make America sustainable; build support for the many sustainability initiatives and campaigns taking place around the country; and advocate for a U.S. sustainability strategy, with an Office of Sustainable Development with inter-agency authority to implement it.

To learn more about the Leadership for Sustainability campaign, visit www.citnet.org.

**Jeffrey Barber, National Coordinator**
**Citizens Network for Sustainable Development**
**Rockville, Maryland**

### Vashon Votes

On Vashon Island, we are working on a voting drive called Vashon Votes! We have a very high turnout for elections, but we are hoping for 100 percent in November this year.

We have voter registration tables out every weekend and monthly articles to inform people about every part of the process. In addition, we are going to reach out to the young, new voters in the fall and offer assistance and fun activities for the election. "10 Ways You Can Change U.S. History" had a lot of great contacts for organizations working on the vote.

Thanks for the great info and keep up the good work.

**Sarah Gardner**
**Vashon Island, Washington**

### Quilts and Citizenship

Thanks to *YES!* Reader's Take Action, I learned about Judith Meeker's unique More Than Warmth project where students make quilts for their peers overseas. Judith responded to my letter with a phone call and that ended with an offer to come to Mississippi and conduct a teacher workshop on making quilts for kids in Iraq, Africa, Afghanistan, Israel, Cuba and China.

Without Readers Take Action, Judith would never have known about Mississippi 2020's national award-winning Growing Leadership program that lays the foundation for students to become non-violent, self-supporting, contributing citizens. In 1992 Jamie F. Boyll and I created the Growing Leadership program to lay the foundation for children to become model citizens.

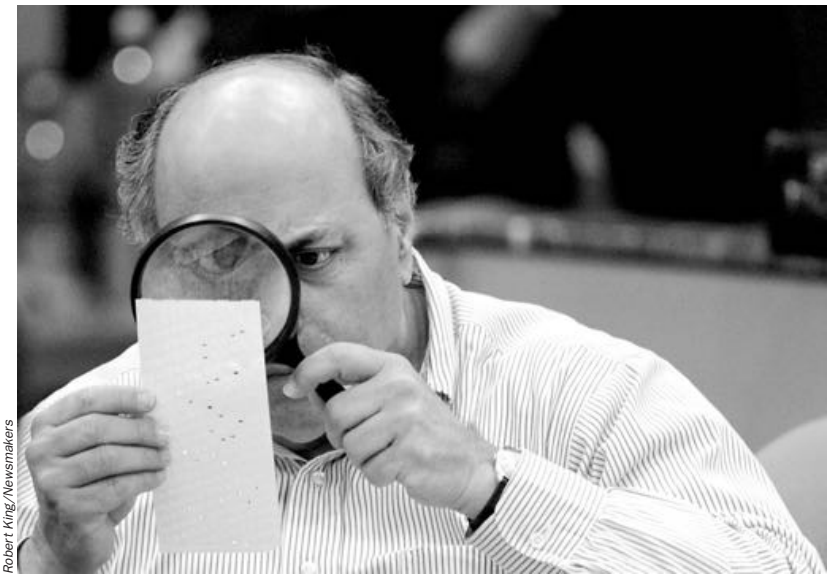
Based on the wisdom of John Dewey, Dr. Michael Cohen, author of *Reconnecting With Nature*, and Dr. David Orr, head of Oberlin College's Environmental Studies Department (see page 47), the program turns a campus into a life laboratory. Curriculum and hands-on "real world" experiences are merged. The immediate effect is student ownership of their education, followed slowly by increases in teamwork, scores and self esteem, reduction in discipline problems and failures, and even greater parental involvement.

Growing Leadership was named the best environmental education program in the nation in 1998 by the National Environmental Education and Training Foundation.

For more information see www.Mississippi2020.org or write me at Mississippi 2020 Network Inc., Box 13506, Jackson MS or e-mail Bob@Mississippi2020.org.

**Bob Kochtitzky**
**Jackson, Mississippi**

# Protecting the 2004 Election



Robert King/Newsmakers

**Robert Rosenberg of the Broward County, Florida, Canvassing Board uses a magnifying glass to examine a dimpled chad on a ballot after the 2000 election**

Alleging disenfranchisement of voters, problematic purging of voter lists, and flawed vote counting procedures, 13 members of the House of Representatives have made a formal request to the United Nations that international monitors be dispatched to oversee the U.S. elections.

"We are deeply concerned that the rights of the U.S. citizen to vote in free and fair elections are again in jeopardy," read the letter drafted in July by Representative Eddie Bernice Johnson, a Democrat from Texas and former chair of the Congressional Black Caucus.

The UN denied the request, stating that any such request must come from the executive branch, according to a spokespersion for Johnson. Johnson sent a request to Secretary of State Colin Powell that he invite UN monitors, and she has requested a meeting about the election with the Justice Department.

In response to Johnson's continued efforts, the Republican-led House voted to attach an amendment to the 2005 foreign aid bill blocking any UN involvement in U.S. elections.

In the ensuing debate on the House floor, Representative Corrine Brown (D-Florida), a co-signer of the letter to the UN, lashed out at Representative Steve Buyer of Indiana, the Republican author of the amendment, referring to the 2000 election as a "coup d'etat."

Ruled out of order in a party-line vote, Brown was formally reprimanded by the House and barred from speaking on the floor for the rest of the day.

Meanwhile, Representative Robert Wexler is filing a federal lawsuit over the lack of paper records in electronic voting machines, and Representative Kendrick Meek is assembling his own team of election monitors that will be available to respond to any complaints received from voters on election day.

In his remarks to the NAACP Convention in mid-July, presidential candidate Senator John Kerry said his campaign is prepared to provide legal teams and election monitors around the country "to enforce the law."

Kerry's efforts will also focus on precincts in Florida that were particularly fraught with election irregularities in 2000. Kerry said his legal team will seek court injunctions to make certain that all who want to vote can get to the polls and that every vote is counted, according to the Associated Press.

On July 11, faced with lawsuits and protests from civil rights groups, Florida election officials announced the state was scrapping its list of purported felons. Officials had discovered that the list omitted nearly all Hispanics, shielding this group from being purged from voting rolls. Many Hispanics in Florida are Cuban-American, who overwhelmingly vote Republican, whereas black Floridians, who are disproportionately represented on the purge lists, overwhelmingly vote Democratic.

Also in July, more than 15 national groups, including MoveOn, Howard Dean's Democracy for America, People for the American Way, and Verified Voting, announced formation of the National Ballot Integrity Project to coordinate public oversight in the elections. The project website posts links to over 30 voting watchdog groups and gives updates on the latest news on voting integrity, including state-by-state information.

In May, a coalition of groups unveiled Election Protection 2004 to inform voters of their rights and work with local election officials to address problems. On election day, the program will provide poll monitors to watch for instances of voter intimidation or

suppression, as well as toll-free voter hotlines (866/OUR-VOTE) to provide voters with instant access to free legal advice from volunteer lawyers and law students trained in election law.

**—Janis Siegel**

***For more information on voting issues, go to www.ballotintegrity.org. For information on how to participate in poll monitoring, go to Election Protection, www.pfaw.org/pfaw/general/default.aspx?oid=12711. Janis Siegel is a freelance writer who lives in Seattle.***

## States Sue Over Climate Change

Eight states and the city of New York filed suit in July against five U.S. utility companies, saying their power plants are responsible for 10 percent of U.S. carbon dioxide emissions, blamed for global warming. The lawsuit demands cuts in emissions, but does not seek any monetary damages.

The suit was filed under the common law doctrine of public nuisance, according to a statement from the state attorneys general filing the suit, and it contends that the companies' emissions contribute to harm borne by the public. The suit is the first by state or local governments to try to force companies outside their jurisdictions to curb carbon-dioxide emissions. According to *The New York Times,* the suit seeks a court order requiring the companies to reduce their emissions by at least 3 percent per year for 10 years.

New York City's top lawyer, Michael A. Cardozo, evoked the possibility that carbon-induced global warming could cause New York City to flood, while Wisconsin Attorney General Peg Lautenschlager warned that global warming could cause respiratory illness, heat-related deaths, decimated forests, catastrophic storms and floods, and lowered water levels in the Great Lakes that would threaten shipping. New York State Attorney General Eliot Spitzer, who has previously sued tobacco companies, mutual fund companies, and coal-burning utilities and who has criticized the Bush administration for not enforcing clean-air regulations, said the scientific link between carbon emissions and global warming is clear.

The states of California, Connecticut, Iowa, New Jersey, Rhode Island, and Vermont also joined the suit. The companies being sued are American Electric Power, Southern Company, the Tennessee Valley Authority, Xcel Energy, and Cinergy. Together, the utilities own or operate 174 fossil-fuel burning power plants in 20 states that emit some 650 million tons of carbon dioxide each year.

**—Carolyn McConnell**

## Cancer Alley Activist Honored

Margie Eugene-Richard this spring became the first African American to receive the Goldman Environmental Prize, an annual award often called the environmental Nobel. Also receiving the award this year were six others, including two grassroots activists from Bhopal, India, who are pressing to hold Dow Chemical responsible for the disastrous Bhopal gas spill, and a Ghanaian lawyer fighting the World Bank's plan to privatize his country's water supply. Since 1990 the Goldman Prize has honored 101 people in 61 countries, including the famous Love Canal activist Lois Gibbs.

Eugene-Richard is a fourth-generation resident of Old Diamond, a neighborhood in Norco, Louisiana, along the notorious Cancer Alley, a swath of the Deep South so-called because of its high rate of devastating environmental illness. She grew up in a house located just 25 feet from a Shell chemical plant. Two of her sisters died of rare ailments. After a Shell pipeline explosion rocked the entire town in 1988, Eugene-Richard founded Concerned Citizens of Norco to hold Shell accountable. By 2000, Eugene-Richard and her organization had pressured Shell into reducing plant emissions by 30 percent, improving evacuation procedures for local residents, and paying to relocate families who lived next to the facility. In 2002, they secured a $5 million fund from Shell to relocate the entire neighborhood and succeeded in pressing for a criminal investigation into alleged falsification of emissions reports.

**—Darrin Burgess**

***For more information on the Goldman awards, see www.goldmanprize.org.***

## Black Representatives Demand Action on Sudan

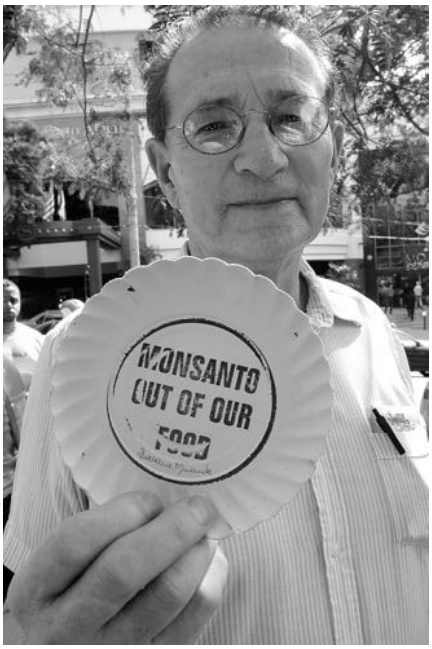
Echoing the 1984 beginning of their fight against apartheid, Representative Charles Rangel (D-NY) and former Representative Walter Fauntroy were arrested in July outside the Sudanese embassy for acts of civil disobedience. The two seek to raise awareness of the unfolding genocide in Sudan. Rangel's arrest was followed by those of Representative Bobby Rush; former Representative Bob Edgar, who heads the National Council of Churches; activist and comedian Dick Gregory; and others.

The arrests were part of ongoing protests by the Sudan Campaign, an alliance of groups that include African Action, the Congressional Black Caucus, and Christian Solidarity International, and other civic and church groups.

Conflict in the Darfur region of Sudan has, according to the U.S.

**Margie Eugene-Richard, a 2004 Goldman Environmental Prize winner**

*Jim Iocona. Photo courtesy the Goldman Awards*




Andre Felipe/Getty Images

**Canadian farmer Percy Schmeiser was sued by Monsanto over genetically modified grains that cross-pollinated his fields**

Agency for International Development, resulted in 30,000 deaths, the razing of 56,000 homes, and the displacement of some 2 million people. Arab militias have carried out attacks against the mostly black population of the region, killing and raping residents and burning villages.

According to Fauntroy, although the strife has broken out along ethnic and religious lines, it is in fact a resource war. The predominantly black areas of Sudan contain reserves of oil and water. Chevron is reportedly developing the Sudanese oil fields. Fauntroy says the current hostilities, which began when blacks sought land and political power, are now an effort to complete the disenfranchisement of black Sudanese.

International observers say that, absent immediate action, the situation could result in a worse tragedy than the 1994 Rwanda genocide. The Sudanese government has blocked aid efforts, claiming that any problems are the result of drought and that there is no unusual violence.

In a June visit to Africa, U.S. Secretary of State Colin Powell renewed demands for the government to admit aid agencies and threatened a UN resolution creating an arms embargo and travel ban on the Arab militias. Critics call the administration's responses inadequate.

Rangel and others are calling for immediate intervention by UN peacekeeping troops and direct aid to the affected areas. In July, the U.S. House and Senate unanimously passed resolutions labeling the conflict in Darfur genocide.

**—Doug Pibel**

***Doug Pibel is a YES! contributing editor. For more information, go to www.sudancampaign.com or www.africaaction.org.***

## GM Wheat Shelved

Monsanto, the largest seller of genetically modified (GM) seeds worldwide, announced this spring that it would shelve plans to market a strain of wheat genetically modified to resist the herbicide Roundup.

The strongest opposition to the GM wheat came from Europe and Japan, the two main purchasers of U.S. wheat. Buyers said they would not buy GM wheat, because their consumers would not want it. Some buyers said they would not buy any wheat from the United States if GM wheat were introduced here, because of fear of cross-contamination of non-GM wheat with the GM variety. This potential boycott led US and Canadian farmers to join the opposition to Monsanto's GM wheat.

In recent years, Monsanto also dropped plans for GM potatoes—because fast-food chains refused to buy them—and GM crops raised to create pharmaceuticals. Nevertheless, the acreage of existing GM crops continues to grow in the U.S. and worldwide. In the next few years, Monsanto plans to focus on GM corn, cotton, and soybeans, which tend to be less controversial because they can be used for animal feed or oil rather than human food. Monsanto says that it has not ruled out selling GM wheat in the future. The current U.S. case at the World Trade Organization against the European Union over genetically modified organisms (GMOs) could result in trade sanctions for any country boycotting them.

In April, Vermont became the first state to regulate GMOs when Republican Governor James Douglas signed the Farmer's Right-to-Know Seed Labeling Bill. Under the bill, manufacturers must label GM seeds and report sales of GM seeds to state authorities.

Meanwhile, the International Treaty on Plant Genetic Resources became law on June 29. This law protects plant genetic material of value for agriculture and limits the right of corporations to control access to 64 of the most important food and fodder crops. A diverse gene pool helps ensure that plant species can adapt to pests or climate change.

The treaty, facilitated by the Food and Agriculture Organization of the United Nations, remains ambiguous about the right to patent genetic material and organisms. The treaty states that no patents may be taken out on the genetic resources covered by the treaty. However, the wording could allow for privatization of resources that have been genetically modified.

**—Michelle Burkhart**

## Mercury in Vaccines Rejected

Iowa became the first state to ban the mercury-based preservative Thimerosal from vaccines in May. The compound has been embroiled in the controversy over the causes of rising rates of autism, which was once considered a very rare condition, but now afflicts as many as one in 150 children.

Similar bills are pending in several other states, including Nebraska and Missouri, and in April a bill to ban Thimerosal from vaccines nationally was introduced in Congress.

The Institutes of Medicine announced in May that a survey of studies of Thimerosal found no link to autism. However, SAFE Minds, a parent advocacy group that opposes Thimerosal in vaccines, charged that many of the scientists doing studies of Thimerosal had ties to vaccine makers.

Methyl mercury is known to cause neurological damage, but Thimerosal contains ethyl mercury, about which less is known. Thimerosal has been used in vaccines since the 1930s. However, the number of vaccines infants receive rose from eight to 20 in the 1990s, almost tripling the amount of mercury they were exposed to. The level of mercury in the environment has also risen, and pregnant women have been urged to avoid oily fish, which contain increasing amounts of mercury.

Although Thimerosal was removed from some vaccines in 1999 after the American Academy of Pediatrics and the U.S. Public Health Service recommended against its use in infants, it remains in many vaccines, including some flu shots. A number of lawsuits by parents of autistic children are pending against vaccine makers. A provision in the 2003 Homeland Security Act gave some immunity to makers of Thimerosal-containing vaccines.

**—Carolyn McConnell**

***To find out which vaccines contain Thimerosal, go to www.vaccinesafety.edu. For more information about opposition to Thimerosal see www.safeminds.org.***

## Vote Efforts in High Gear

Organizations across the country are taking extraordinary measures to motivate eligible voters to turn out in November. One of the most ambitious projects was launched last fall by Working Assets, a phone and credit card company committed to progressive causes, which has pledged to register 1 million new voters in time for the November elections.

Dubbed "Your Vote Matters," the campaign is helping several nonpartisan, nonprofit groups register voters in low-income and under-represented communities. U.S. Action, Project Vote, and ACORN are among the organizations that have deployed teams of canvassers and volunteers armed with registration forms and clipboards to hundreds of shopping centers, busy intersections and bus stops. Together, the groups have registered about 800,000 voters.

Working Assets has posted an online registration form at www.YourVoteMatters.org, and given grants to nonpartisan affiliates for their own online registration drives.

Two other major voter-turnout efforts are the NAACP's nationwide "Voter Empowerment" program, assembling major organizations in the African-American community, and the League of Independent Voters, which encompasses such disparate elements as the hip-hop community, performance artists, punk rockers, bicyclers, and civil rights activists.

Others are doing more lighthearted voter-turnout efforts. A Rochester, New York, brewery promises free beer for each new registrant; in Times Square, a television producer sponsors celebrity-strewn billboards to create what one executive calls "a brand of passion" for voting; strip clubs throughout the swing states are brandishing voter registration cards and beckoning clientele to turn their attention, this November, from pole dances to polling booths.

**—Darrin Burgess**

## Court Rejects Media Deregulation

A July ruling on media ownership by a federal appeals court in Philadelphia handed a victory to grassroots activists working for media democracy, and delivered a defeat to the Bush administration and to the small handful of corporations who own or distribute most of what Americans see, hear, and read.

The court's ruling effectively nullified the Federal Communications Commission's June 2003 decision to weaken a set of media ownership regulations.

The FCC's new rules, which were stayed by the court last fall and never went into effect, would have increased the number of television stations a single company could own in individual cities as well as nationwide. It also would have allowed cross-ownership of both newspapers and broadcast stations in the same community.

Prior to the June 2003 FCC decision, hundreds of thousands of citizens sent in e-mails, postcards, and letters opposing the proposed deregulation on the grounds that consolidation is harmful to diversity. The FCC issued its weakened ownership rules anyway, on


Chris Hondros/Getty Images

**A federal appeals court ruling dealt a setback to policies allowing greater media consolidation**

a 3–2 vote spearheaded by Chairman Michael Powell.

A nationwide network of grassroots community groups mobilized public opposition to the planned deregulation and pushed Congress and the federal courts to block the new rules. Congress launched several attempts to repeal aspects of the FCC decision or to completely overturn it, but none succeeded entirely.

The legal case was brought by a Philadelphia-based grassroots group the Prometheus Radio Project in conjunction with the Media Access Project, a public interest law firm based in Washington, D.C.

The Third Circuit Court rejected Powell's position that unless the FCC could demonstrate that a particular ownership regulation remained necessary to the public good, it should be swept away. The FCC ought not to use its biennial reviews as a "one-way ratchet" toward deregulation, the court said. The FCC might in fact find that "the public interest calls for a more stringent regulation," the court noted, rather than a loosening of ownership caps.

While the court didn't object to every aspect of the FCC's June 3 decision, it remanded the entire decision to the FCC for reconsideration, citing numerous inconsistencies and an overall lack of transparency in the FCC's methods and logic. The court also rebuked the FCC for failing to provide more public notice of its planned review of the ownership rules.

When the FCC begins to revisit the ownership rules—a process expected to begin again this fall—there will be tremendous pressure for the FCC to open its proceedings to public input. Grassroots groups have launched a campaign for the FCC to hold official public hearings in all 50 states before further altering the ownership rules.

**—Jonathan Lawson**

***For more information, see www.reclaimthemedia.org, www.prometheusradio.org, www.freepress.net, or www.mediaaccess.org.***

***Jonathan Lawson is cofounder and codirector of Reclaim the Media, which advocates for media democracy in the Northwest.***

## Authority to Postpone Vote Considered

Days after Homeland Security Secretary Tom Ridge announced that al-Qaeda is planning unspecified "large-scale" attacks aimed at disrupting the presidential campaign and the November elections, *Newsweek* reported that Bush administration officials were examining a proposal that would allow elections to be postponed or cancelled in the event of a terrorist attack.

DeForest Soaries, the Bush-appointed chair of the Election Assistance Commission, sent Ridge a letter requesting that he ask Congress to pass legislation giving his agency the power to reschedule the elections, according to *Newsweek*. Ridge's office had asked the Justice Department to review the issue. Bush officials later said there was no specific proposal for postponing elections. However, the Republican chairman of the House Homeland Security Committee, Christopher Cox, told CNN that establishing such contingency plans was part of a prudent effort to plan for "doomsday scenarios."

**—Carolyn McConnell**

## Campaigning for Time

During a recent appearance on PBS' "NOW with Bill Moyers," Republican pollster and strategist Frank Luntz observed that "lack of free time" is the number-one issue with swing voters. "The issue of time matters to them more than anything else in life," Luntz declared.

Americans feel increasingly time crunched. *The Wall Street Journal* confirmed that Americans are working 20 percent longer today than in 1970, while work-time has declined in other industrial countries. Our vacations are disappearing, and a new Harris survey finds that 37 percent of women earning less than $40,000 a year (and 28 percent of all working women) receive no paid vacation at all.

"Right now," Frank Luntz says, "no one has created an agenda, what I would call the free-time agenda. So it's up for grabs. Just like these swing voters are."

Luntz is only partly right. Neither American political party has addressed the issue in any serious way. But at Loyola University in Chicago this past June, more than 100 labor, religious, family, environmental, business, and other leaders met for the founding conference of the "Take Back Your Time" movement and unveiled a free-time agenda they hope political candidates will support. The agenda includes four items:

- Paid family leave.
- Three weeks minimum paid vacation for all workers
- The right to refuse overtime after 48 hours on the job per week.
- A holiday on election day.

Take Back Your Time leaders say each of these measures, if adopted, would only bring the United States closer to standards already in place in all other industrial countries. One new political candidate, Anne Nolan, who is running for the Minnesota state Senate, is putting the Take Back Your Time agenda at the top of her campaign priorities.

The movement celebrated its first Take Back Your Time Day last year, with events in more than 200 communities and endorsements from several cities and the governor of Michigan. Take Back Your Time Day is October 24th, the anniversary of the date in 1940 when the 40-hour workweek became law in the United States.

**—John de Graaf**

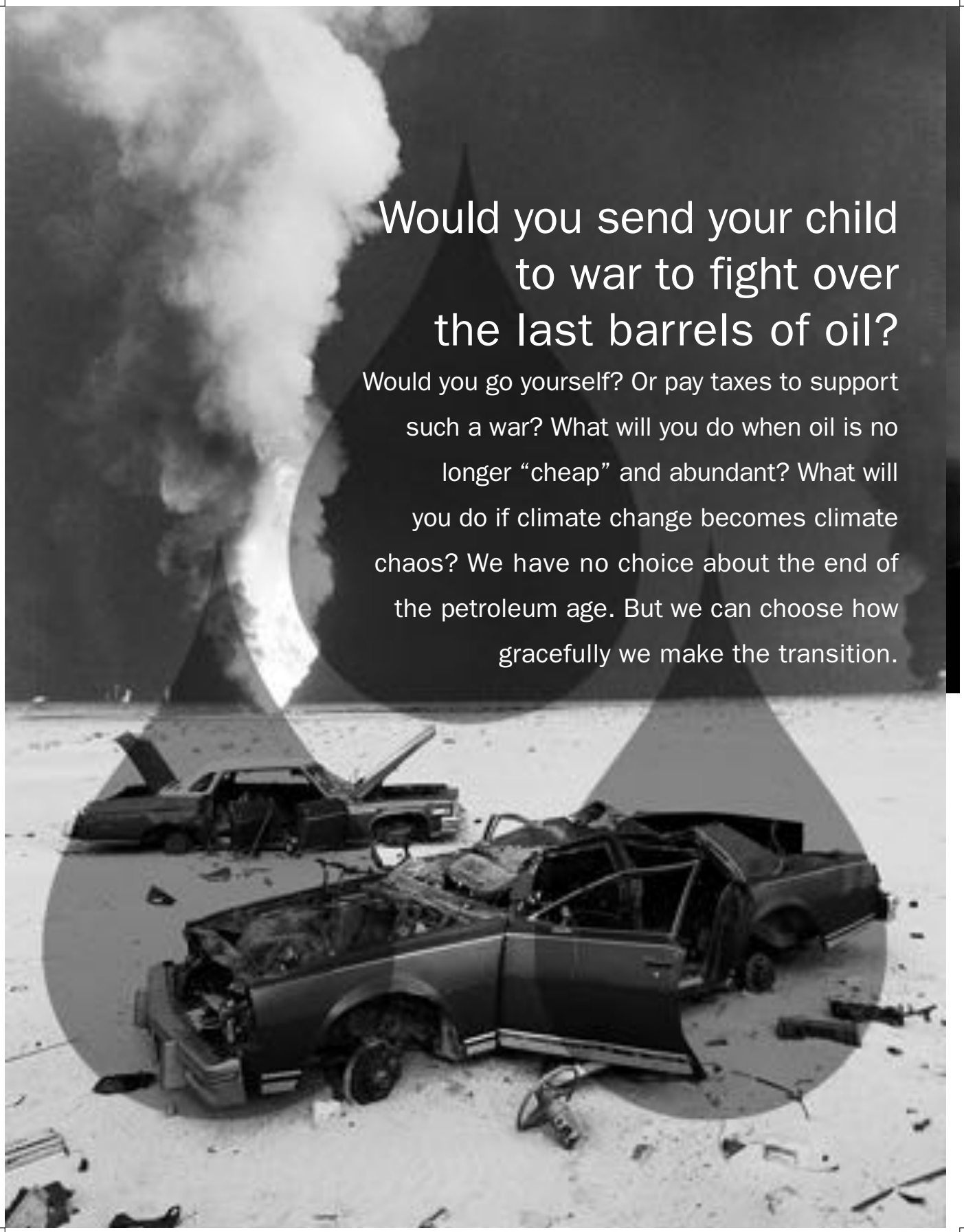
***John de Graaf is national coordinator of Take Back Your Time, www.timeday.org.***

# the page that counts

Number of inches by which Europeans exceed European-Americans in height: 2[1]
Number of pounds by which American suburbanites exceed American city dwellers in weight: 6[2]
Number of miles driven per day per resident in Los Angeles: 23
In Seattle: 26
In New York City: 14[3]
Percent of the 7 million pet reptiles in U.S. homes that carry salmonella: 94[4]
Percent of Americans who believe Americans have "too much freedom to speak freely": 12[5]
Number of new secrets the Oval Office classified last year: 14 million
Approximate percent of these secrets, according to the National Security Archive, whose classification was "dubious in the extreme" (including Augusto Pinochet's favorite liquor beverages, Scotch and Pisco Sours): 90[6]
Fraction of prisoners now serving a life sentence in the United States: 1 in 11
Fraction of those prisoners who have no option of parole: 1 in 4
Number of prisoners serving a life sentence in Michigan alone, for crimes committed between the ages of 14 and 16: 146[7]
Number of the 2000 Bush campaign's 241 Pioneers (fundraisers who raised at least $100,000) appointed to federal posts: 99[8]
Number of feature stories that major television networks aired on the March for Women's Lives of April 2004, which had an estimated turnout of 1.15 million: 6
Number of feature stories aired on the Promise Keepers' march of October 1997, which had an estimated turnout of 750,000: 19[9]
Amount that Catholic clergy in Europe, the U.S., and Canada pay clergy in India to perform a ritual prayer request: $5.00 to $10.00[10]
Number of board feet of lumber buried each year in U.S. cemeteries: 30 million[11]
Number of 2,000-square-foot homes this would construct: 15,000[12]
Number of times more money the Department of Homeland Security gives Wyoming per resident to prevent terrorism than it gives New York: 7[13]
Amount of money taken from the Department of Energy's solar, renewables, and energy conservation budget to pay for 10,000 copies of the White House 2001 energy plan: $135,615[14]
Tons of lead waste that the Federal Law Enforcement Training Center shooting range has prevented in six years, since switching to "green" bullets made of iron and copper: 35[15]
Age at which U.S. children begin asking for brand name products: 3[16]



**1.** John Komlos, Marieluise Bauer, "From the Tallest to (One of) the Fattest: The Enigmatic Fate of the American Population in the 20th Century," http://ideas.repec.org/p/lmu/muenec/76.html. **2.** Reid Ewing, Tom Schmid, and Richard Killingsworth, "Relationship Between Urban Sprawl and Physical Activity, Obesity, and Morbidity," p. 52, *American Journal of Health Promotion*, September/October, 2003. **3**. Bob Dunphy, "Who Drives Most/Least Among U.S. Regions?," Highway Information Quarterly Newsletter, www.fhwa.dot.gov/ohim/hiq/hiqoct02.htm, October 2002. **4.** Jonathan Mermin, Lori Hutwagner, and Duc Vugia, "Reptiles, Amphibians, and Human Salmonella Infection: A Population-Based, Case-Control Study," p. 6, Centers for Disease Control and Prevention's National Center for Infectious Diseases, www.dcd.gov/foodnet/pub/CID/merminj.pdf. **5.** *State of the First Amendment Survey*, p. 25, First Amendment Center Online, www.firstamendmentcenter.org. **6.** "Dubious Secrets: National Security Archive Electronic Briefing Book no. 90", ed. Jeffrey Richelson, William Burr, and Thomas Blanton, www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB90/index.htm, May 21, 2003. **7.** Marc Mauer, Ryan S. King, and Malcolm C. Young, "The Meaning of Life: Long-Term Prison Sentences in Context," The Sentencing Project, www.sentencingproject.org/pubs_06.cfm, May, 2004. **8.** "Payola Pioneering: Exposing the Bush Pioneer/Ranger Networks," Texans for Public Justice, www.tpj.org/pioneers/pioneers04/what_appointment.html. **9.** "Action Alert: Women's March Coverage Hard to Find on Television News," Fairness and Accuracy in Reporting (FAIR), www.fair.org/activism/womens-march-networks.html, May 3, 2004. **10**. Saritha Rai, "Short on Priests, U.S. Catholics Outsource Prayers to Indian Clergy," *New York Times*, June 13, 2004. **11.** Mary Woodsen, Pre-Posthumous Society, www.eternalreefs.com/msnbc103002.htm, compiled from statistics by Casket and Funeral Association of America, Cremation Association of North America, Doric Inc., and Rainforest Action Network. **12.** Al Heavens, "Lumber Tariffs Could Boost New Home Prices," *Realty Times*, June 6, 2002. **13**. Elizabeth Kolbert, "Risk Management," *The New Yorker*, May 31, 2004. **14.** Tom Doggett, "Bush Tapped Solar Energy Funds to Print Energy Plan," Reuters, Friday, March 29, 2002. **15.** "Ammunition," Office of the Federal Environmental Executive, www.ofee.gov/wpr/. **16.** "New Poll Shows Marketing to Kids Taking its Toll on Parents, Families," Center for a New American Dream, 1999, www.newdream.org/campaign/kids/press-release.html.


Would you send your child to war to fight over the last barrels of oil?
Would you go yourself? Or pay taxes to support such a war? What will you do when oil is no longer “cheap” and abundant? What will you do if climate change becomes climate chaos? We have no choice about the end of the petroleum age. But we can choose how gracefully we make the transition.

Thom Hartmann

# the end of ancient sunlight

## In a very real sense, we're all made out of sunlight.

Sunlight is the source of almost all life on Earth. Many people I meet believe that plants are made up of the soil in which they grow. That's a common mistake. A tree, for example, is mostly made up of one of the gases in our air (carbon dioxide) and water (hydrogen and oxygen). Trees are solidified air and sunlight.

Animals, including humans, cannot create tissues directly from sunlight, water, and air, as plants can. Thus the human population of the planet has always been limited by the amount of readily available plant food (and the supply of animals that eat plants).

Something important happened about 40,000 years ago: humans discovered they could domesticate ruminant (grazing) animals like goats, sheep, and cows that convert daily sunlight captured by scrub and wild plants on "useless" land into animal flesh, which humans could eat.

About this time, we also figured out that we could replace forests with farmland. Because we had discovered and begun to use herding and agriculture to convert the sun's energy into human food more efficiently, our food supply grew and the human population started growing faster.

Within a few thousand years we also discovered how to extract mineral ores from the Earth, to smelt pure metals from them, and to build tools, such as plows and scythes, that made us much more productive farmers. So the period from 8,000 B.C. until around the time of Christ saw the human population of the world increase from 5 million people to 250 million people. But we were still only using about one year's worth of sunlight-energy per year, and our impact on the planet remained minimal. We weren't "dipping into our savings" to supply our needs, yet.

Then, in the Middle Ages we discovered a new source of sunlight that had been captured by plants nearly 400 million years ago: coal. This represents a critical moment in human history, for this is when

*Photo left: J.Devera/UNEP; above: Tim McCabe/UNEP*

"It's not normal weather here. The last few years have been like nothing before."

our ancestors started living off our planet's sunlight savings. Because our ancestors could consume sunlight that had been stored by plants millions of years ago, they began for the first time to consume more resources—in food, heat, and other materials—than the daily amount of sunlight falling locally on our planet had historically been able to provide.

Had our ancestors run out of coal, nature would have taken over and limited their population. Instead, our ancestors discovered another reserve of ancient sunlight: plant matter that, hundreds of millions of years ago, had trapped the atmosphere's rich carbon dioxide and sunk to the floor of the oceans, and had then been trapped below ground and compressed into what we refer to as oil.

Oil was first widely used around 1850 in Romania, where it was found in pools in crevices and caves. The first oil well was tapped in 1858 in Canada, but major production began in 1859, when oil was discovered in Titusville, Pennsylvania, and the 19th century drilling boom began in earnest. The discovery of abundant supplies of oil kicked open the door to a truly massive store of ancient sunlight. By using this ancient sunlight as a heating source and energy source, and by replacing farm animals with tractors, our ancestors dramatically increased their ability to produce food.

It turned out that people could use oil for far more than just fuel. Oil is used to make synthetic fabrics (nylon, rayon, polyester), resins, plastics, and fertilizers. Because we could make clothes from oil, we needed less sheep-grazing land and cotton-growing land, thus allowing us to convert even more non-food croplands to food production.

It took just 14 years, from 1960 to 1974, for us to grow from 3 to 4 billion humans worldwide. The human population hit 6 billion in 1999. By the fifth billion, in 1987, humans became the most numerous species on Earth in terms of total biomass. We now consume more than 40 percent of the world's total "net primary productivity," the sum total of sunlight-generated food and energy available to all species on Earth. This means that every other species of plant and animal must now compete against each other for what little we have left them.

### How much is left?

How long will our savings of ancient sunlight hold out? How much fossil fuel do we have left?

Since the discovery of oil in Titusville in 1859, humans have extracted 742 billion barrels of oil from the Earth. Currently, world oil reserves are estimated at about 1,000 billion barrels.

Most oil company executives, however, don't seem to think this is a problem. In an upbeat and optimistic speech presented to the Economic Club of Columbus, Ohio, in 1996, an Ashland Chemical Company executive pointed out that world oil reserves should last "almost" 45 years, assuming that consumption doesn't increase at all from current-day levels. But according to data furnished by the Geneva–based international petroleum-industry consulting firm, Petroconsultants (among others), world consumption of oil today is increasing at about 2.8 percent per year. If we project that out into the future, our 45-year oil-supply figure drops into the range of just over 30 years. And current (2004) industry information (such as from the British Petroleum website www.bp.com and other industry sources) indicates that we have between 25 and 45 years worth of oil left.

Other experts in the oil industry are less optimistic about the supply of oil left in the ground. Petroconsultants notes that North American production of oil peaked in 1974. The Petroconsultants study points out that even if consumption was dampened by worldwide reductions in oil usage because of increased price (and the probable worldwide depression that this would cause), declining supplies will lower oil production in 2050 to levels similar to those of the 1960s, when the global population was 3 billion. But most demographers expect that in 2050 the world population will exceed 10 billion.

Then again, other experts suggest that the oil-industry estimate of 45 years is wildly inflated, meaning the situation is even worse than just described.

Scientist M. King Hubbert first pointed this out in 1956, when he developed the well-known "Hubbert Peak," defining the moment when oil supplies have peaked and then begun a downhill slide. In 1956, he projected a Hubbert Peak for the U.S. in 1970 (he was four years off: the oil peaked in 1974), and in 1975, Hubbert predicted a worldwide Peak for 1999 or 2000. Although Hubbert died in 1989, his work was carried on by J. Colin Campbell, author of *The Golden Century of Oil: 1950–2050: The Depletion of a Resource*, a book that originated as part of a study of worldwide oil supplies and

consumption commissioned by the Norwegian government in 1989. Campbell and other scientists point out that oil producing countries often inflate their estimated oil reserves to qualify for higher OPEC production quotas and so they can borrow money from the World Bank using their supposed oil supplies as collateral. He and other experts estimate that we are already atop the halfway mark in the world's total oil supply, and that there may be far fewer than 700 billion barrels still in the ground.

It's worth noting that it's unlikely that we'll be soon be finding easily accessible new pools of oil. Most of the world has now been digitally "X-rayed" using satellites, seismic data, and computers, in the process of locating 41,000 oil fields. 641,000 exploratory wells have been drilled, and almost all fields that show any promise are well known and factored into the 1 trillion barrel estimate the oil industry uses for world oil reserves.

When about half the oil has been removed from an underground oil field, it starts to get much harder (and thus more expensive) to extract the remaining half. The last third to quarter can be excruciatingly expensive to extract.

At the same time, China, India, Mexico, and the rest of the Third World are industrializing—adding factories, cars, building highways, and constructing oil-fueled power plants—at a growth rate that's faster than both the United States' or Europe's over the past century. According to an exhaustive scientific study by the British power company PowerGen, reported by the Associated Press in September, 1997, "Global energy demand is forecast to double by 2020."

## Climate changes

One recent July afternoon we had an electrical storm here in central Vermont that was so severe it took out two of my computers and blew circuit breakers throughout the house.

Larry, a fellow we'd hired to do some repair work on our half-mile-long driveway, stood atop a hill with me a week after the storm and told how his wife had been thrown across the room from an electric shock she received touching their screen door during the storm. "It's not normal weather here," he said. "The last few years have been like nothing before."

The insurance industry agrees with Larry.

The decade of 1980–1989 was the costliest in history for insurance claims caused by "acts of God" with total claims of over $50 billion. But just the first half of the 1990s saw claims of over $162 billion, prompting the insurance industry to issue an unprecedented call for a decrease in carbon dioxide emissions from industry. Claims have steadily climbed since then, causing many insurance companies to re-write their policies to exclude weather–related or "act of God" events from coverage.

The UN's Intergovernmental Panel on Climate Change (IPCC) has concluded that we are facing a crisis that may well be of Biblical proportions as a result of global warming produced by increased greenhouse gases in the atmosphere.

Each year, we're pumping more than 6 billion tons of heat-trapping carbon dioxide into our thin layer of atmosphere—so much that in just the past 20 years the concentration of $CO_2$ in the atmosphere has increased from 280 parts per million to over 370 parts per million, the highest level in 420,000 years. Within a few more decades, $CO_2$ levels are projected to exceed 500 parts per million, thus dramatically warming the planet.

But how warm? According to the IPCC scientists, at least 3–4 degrees Celsius, and possibly as much as 7 degrees.

"What's so bad about that?" many people ask. "Three degrees is nothing, and if that warms up the climate of Michigan or Maine, wouldn't that be better for the growing season, recreation, and everything else?"

Climate change driven by increasing carbon dioxide levels already appears to be producing huge swings in weather all over the planet, because heat is energy, and increased heat in the atmosphere means increased energy in the atmosphere. This increased energy makes for less stable and more violent weather worldwide.

The April 26, 2003, issue of Britain's *New Scientist* magazine arrived at my home the same week in May that the worst tornadoes in U.S. history were taking apart big chunks of the American Midwest. The article titled "Here Comes The Rain" opened with, "As the world gets warmer, it is getting wetter." The article pointed out that as the overall temperature of the atmosphere increases, so, too, does its ability to hold ever-larger quantities of water. This increase in moisture and air density drives ever-more-powerful storms, and when the water is dropped from the skies it results in record-breaking floods. (Because water vapor also traps heat, this initial seeding of moisture also begins a small but significant positive-feedback cycle amplifying the problems of global warming. But we digress...)

When I was in Australia, as wildfires were

ravaging New South Wales and licking up against Sydney, nearly every newscast reported that the fires were caused by drought that climate scientists had previously predicted would be the unstoppable result of global warming. However, not a single news report in the U.S.—on radio, TV, newspapers, or the Internet—mentioned how the flooding in the Midwestern U.S. had been predicted just months earlier at a conference of European global warming experts. Neo-conservative front men for the fossil fuel industry have effectively cowed news reporters in all sectors of American reporting.

## A new ice age?

In the context of all this discussion about global warming, it may seem odd to bring the conversation around to a new ice age. An ice age, caused by global warming, is the setting for the disaster film, *The Day After Tomorrow*, which stretches credulity for dramatic purposes, but nonetheless, suggests the seriousness of the issue. Climate change may well be the greatest threat the world faces today.

If you look at a globe, you'll see that the latitude of much of Europe and Scandinavia is the same as that of Alaska and permafrost-locked parts of northern Canada and central Siberia. Yet Europe has a climate more similar to that of the United States than northern Canada or Siberia. Why?

It turns out that our warmth is the result of ocean currents that bring warm surface water up from the equator into northern regions that would otherwise be so cold that even in summer they'd be covered with ice. The current is often referred to as "The Great Conveyor Belt."

If the Great Conveyor Belt, which includes the Gulf Stream, were to stop flowing, the result would be sudden and dramatic. Winter would set in for the eastern half of North America and all of Europe and Siberia, and never go away. Within a few years, those regions would become uninhabitable and nearly 2 billion humans would starve, freeze to death, or have to relocate. Civilization as we know it probably couldn't withstand the impact of such a crushing blow.

Prior to the last decades, it was thought that the periods between glaciations and warmer times in North America, Europe, and North Asia were gradual, lasting dozens to hundreds of years. Looking at the ice cores, however, scientists were shocked to discover that the transitions from ice age-like weather to contemporary-type weather usually took only two or three years.

Most scientists involved in this research agree that the melting of the icebergs on Greenland and the Arctic ice pack, currently underway as a result of global warming, and the flushing of cold, fresh water down into the Greenland Sea from the north, could reduce salinity sufficiently to switch off the Great Conveyor Belt. When this critical threshold is reached, the climate could suddenly switch to an ice age that could last a few hundred years, or hundreds of thousands of years.

And when might that threshold be reached? Nobody knows—the action of the Great Conveyor Belt in defining ice ages was discovered only in the last decade. Preliminary computer models and scientists willing to speculate suggest the switch could flip as early as next year, or it may be generations from now. As William Calvin documents in his book on this topic, *A Brain for All Seasons: Human Evolution and Abrupt Climate Change*, "In the Labrador Sea, flushing failed during the 1970s, was strong again in the 1980s, and then declined. In the Greenland Sea over the 1980s salt sinking, which drives the Great Conveyor Belt, declined by 80 percent."

## Energy and the rise and fall of empires

This isn't the first time, of course, that changes in the climate have threatened humans. One of the first empires of Western civilization is the Sumerian kingdom of Uruk, in Mesopotamia, which is now known as Syria, Iraq, and Lebanon.

According to the Epic of Gilgamesh, the oldest written story in the world, one of the first kings of the earliest Sumerian civilization (the Uruks) was a man named Gilgamesh. He was the first mortal to defy the forest god, Humbaba, who had been entrusted by the chief Sumerian deity, Enlil, to protect the cedar forests of Lebanon from mankind.

King Gilgamesh wanted to build a great city, Uruk, to immortalize his contribution to Sumerian civilization. So he and his loggers rebelled against Humbaba and began to cut the forests, which then stretched from Jordan to the sea in Lebanon. The story ends with Gilgamesh decapitating the forest god, Humbaba, and infuriating the god of gods, Enlil. Enlil then avenges the death of Humbaba by making the water in his kingdom undrinkable and the fields barren—thus killing off Gilgamesh and his people.

Along with its other distinctive qualities, the Epic of Gilgamesh is the earliest recorded story of desertification caused by the extensive destruction of forestlands. Lebanon went from more than

90 percent forest (the famous Cedars of Lebanon) to less than 7 percent over a 1,500-year period. Trees and their roots are an important part of the water cycle, so rainfall downwind of deforested areas decreased by 80 percent. Over time, millions of acres of land in the Fertile Crescent area turned to desert or scrubland, and remain relatively barren to this day.

Because of the destruction of the forests, wood became a precious commodity equal in value to some gem and mineral ores. Neighboring countries were conquered for their wood supplies, as well as to get fertile land to grow barley. Vast areas of timberland along the Euphrates and Tigris rivers were cut bare, increasing the siltation of their irrigation canals and cropland and further decreasing downwind rainfall.

The result of this local climatic change more than 5000 years ago was widespread famine. The collapse of the last Mesopotamian empire happened around 4,000 years ago, and the records they left behind show that only at the very end of their empire did they realize how they had destroyed their precious source of food and fuel by razing their forests and despoiling the rest of their environment. For thousands of years they "knew" that their way of life was fine. But it worked only as long as they had other people's lands to conquer. Once they ran out of neighbors, their decline was sudden and devastating, just like a Ponzi scheme.

## When fuel runs low, fighting starts

Every company in the industrialized world today, regardless of their product or service, is in some way selling goods created using repackaged oil. They're using oil and other fossil fuels to heat buildings, ship their raw materials and products, power factories, and as a raw material for products ranging from plastics to fertilizers. Lacking oil, we'd be back to the level of productivity we had in 1800 when there were one-sixth as many humans on the planet and our fuel sources were vegetable oil, whale oil, coal, and wood.

Even a small dislocation in the availability of a primary fuel source can throw an entire nation into disarray. When oil becomes scarce in the next few decades, its price will rise. We in the West, being on top of the energy pyramid, may be the last to feel the pinch, if we use our armies to force Arab and South American countries to continue selling us their oil when supplies begin to dwindle. (Although there is the question of how we'll power the planes and tanks if fuel oil is running low.) When the Mesopotamians, Greeks, and Romans ran low on wood, they too went to war.

Every "modern" civilization over the past 7,000 years has been crippled and then destroyed by a shortfall in their primary fuel supply. Our civilization may or may not elude the same fate

But even if the First World is able to use military force to guarantee access to Third World oil supplies, the dwindling worldwide fuel supply will have widespread and devastating ripple effects. Every "modern" civilization over the past 7,000 years has been crippled and then destroyed by a shortfall in their primary fuel supply. Our civilization may or may not elude the same fate.

## A choice

And so we face some very clear choices about whether we'll innovate and reinvent our lifestyle to be gentler on the Earth, or risk painful and perhaps devastating natural consequences.

The last U.S. president to confront issues of carbon-based fuel was Jimmy Carter. He signed into law policies that helped birth an alternative energy industry and encouraged millions of Americans to make their homes more fuel efficient.

John Kerry has declared the need for America to become "independent of Middle East Oil"—a huge job, and a dramatic departure from George H.W. Bush's declaration that "America's lifestyle is not negotiable," and his son's pushing through a tax deduction for SUV owners.

While there is much we can all do in our own lives to reduce our oil consumption, on the larger level it's likely that true, systemic change will only come when we again have political leadership that sees the problem and addresses it clearly and unambiguously. And that sort of leadership comes to power only when you and I participate in the political process, take back America from the corporate special interests, and return it to We the People.

# getting there on less

**Guy Dauncey**

## Americans are addicted to the joys of the open road. But the joys come at too high a price and we're about to hit bottom. We can get around without oil. Here's the 12-step program to do it

If you were a redwood tree with a lifespan of 600 years,

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and you started life as a seedling in the year 1700, you would be able to live for 200 years in a world without oil, witness the beginning, middle and end of the Age of Oil, and still have 200 years to observe how humans fare in a world without oil (assuming you survive the timber companies).

Our personal memories rarely reach back more than 100 years, to the stories our grandparents told us. Geological time seems to have nothing to do with us. So when someone points out that the Age of Oil will end within our lifetimes, it's hard to register. But that's the reality.

Does this mean we'll revert to the state of medieval villagers, never traveling more than a few miles from our doorsteps? Or can we redesign our transport system so that we can get where we need without burning oil?

The answer to the second question is "Yes," and it can be done using reasonable, accessible steps and currently available technology. My conclusion is that we could meet all our transport needs without any oil transport fuel. We could use 86 percent less oil, and the remaining 14 percent could be replaced by biofuels. I leave hydrogen out of the picture, because biofuel and electricity provide a better delivery of net energy (see more on this argument on page 29). To view my calculations, see www.yesmagazine.org/31oil/dauncey.htm.

Total U.S. oil consumption is 312 billion gallons a year and rising. Transport accounts for 68 percent (212 billion gallons). I focus chiefly on trips in cars and light trucks, which use 54 percent of the transport oil (118 billion gallons a year). This includes trips to work, to the stores, to school, to visit friends, for vacations, and everything else. So buckle your seat belts, and get ready for an oil-free ride. We're going to lose our addiction!


Portland, Oregon's MAX light-rail system averages nearly 80,000 riders on weekdays. Growing ridership continues to outstrip growth in vehicle miles traveled.

# 1 stay home

We can divert 5 percent of our trips by combining errands or not doing them in the first place. Thanks to the internet, many jobs can be done from home or in a local telework center, either full time or one day a week. Grocery shopping can also be done over the Internet, with home delivery by truck being a far more efficient use of fuel than individual shopping.

**5 percent less fuel needed**

# 2 walk

We can do 5 percent of our trips by foot; ancient people walked all the way out of Africa and around the world. Children could walk to school, instead of being chauffeured by their parents. Many people could walk to work and enjoy the exercise. We could redesign our cities and suburbs to make walking a pleasure, and rejuvenate the suburbs by developing local neighborhood centers, creating places where people could shop, have coffee, and meet their neighbors—all by foot.

**So far, we need 10 percent less fuel**

# 3 cycle

Fifteen percent of our trips can be done by bike. Some people say cycling is the most efficient use of energy ever invented. In Davis, California, 80 percent of the streets have bike lanes, and 20 to 25 percent of all local trips are by bike. Imagine a world designed for bicycles, with safe bike lanes, off-road bikeways, bikes with trailers, electric bikes, and folding bikes that are easy to take on a bus or train. In some communities, as much as 40 percent of trips might be made by bicycle. In others, where it snows in winter or there are more hills, the number might be 10 percent.

**We've saved 25 percent so far**

# 4 share rides

Five percent of our trips can be done sharing vehicles. Picture a system where any resident in a community can join the Community Ride Share Club. If you need a ride, you just flash your card, and a member of the Club will stop and give you a ride. People living in a neighborhood or region could create a website where they offer and receive rides based on shared destinations. It also builds community, as people get to know each other.

**We're down to 30 percent less fuel**

# 5 mass transit

Twenty percent of our trips can be done by bus, light-rail transit, or train. When Boulder, Colorado, re-organized its transit system, substituting mini-buses for the big old dinosaur buses, and introducing a city-wide Eco Pass that buys a year's travel for just $50, the share of trips made by transit increased from 1.6 percent to 4.6 percent. It's small, but it's a start.

Imagine minibuses that arrive every ten minutes, and transit stops with electronic timetables within a five-minute walk of every home. Imagine major public investments in light-rail transit, as Portland, Oregon, has done, and high-speed railways, as Europe is doing. If each full bus carries 20 people, it can replace 15 of today's cars, and using a hybrid engine can reduce bus fuel use by 95 percent.

**We're at 50 percent** (Fuel for buses added later.)

We could rejuvenate our suburbs by developing local neighborhood centers, creating places where people can shop, have coffee, and meet their neighbors

# 6 share cars

Car sharing is the big social invention that will make a future without oil manageable. Car sharing started in Europe in the 1980s and spread to North America in the 1990s. As a member, you buy into a fleet of vehicles parked in convenient spots around the city, and when you want to use one, you book it by phone or over the Internet. Because members pay by the mile and the hour, they think twice before driving. The average member of Vancouver's Coop-

erative Auto Network (with 1,600 members) drives 1,400 kilometers a year, compared to a local norm of 6,000 to 24,000 kilometers. You pick the vehicle to suit your trip, and for most trips a small efficient two-seater will do fine, allowing a huge saving of fuel. For our fuel-saving math, we'll assume that 50 percent of the car-driving public joins a Car Share Club. (No direct fuel reduction.)

# 7 electric vehicles

Electric vehicles have been given the cold shoulder by the big auto companies, which have decided there's more money to be made from hybrids and hydrogen vehicles, so they've ditched the idea and recalled their EVs, to the immense frustration of EV enthusiasts.

But EVs do make sense. The new lithium ion batteries can last for nearly 200 miles between charges. When oil costs $5 to $10 a gallon, EVs are going to be very enticing, and fully half of the cars on the road might be electric. For Car Share members, a small EV will work just fine for most trips, while a larger fuel-efficient hybrid can be used for longer trips. But will there be enough electricity? See Step 11.

**Down to 75 percent less liquid fuel**

# 8 hybrid cars

The new Toyota Prius, which is winning praise from its users, averages 48 miles per gallon, twice the efficiency of today's average car. But wait. If you take a hybrid such as the Prius and increase the size of its battery so that it can be charged up from the grid when parked, as well as from its on-board engine, its fuel efficiency improves to 167 m.p.g., an 85 percent reduction on today's typical fuel use (70 percent better than the regular Prius), while still providing the distance for longer trips. Car Share members might use a plug-in hybrid EV for 20 percent of their trips, while private drivers use one for 80 percent; on average, drivers will use them for half their trips.

**We're at 86.25 percent less fuel**

BELOW: the Toyota Prius. Photo courtesy of toyota.com. OPPOSITE PAGE: A single-seat electric vehicle shaped like the Japanese cartoon character Doraemon

# 9 smart cars

They're already in Europe, and they're coming to Canada this fall. The Mercedes diesel Smart CDI two-seater does 69 m.p.g.. The Volkswagen One-Litre, a two-seater prototype that's been on the roads in Europe, does 237 m.p.g. Yes, you read that correctly. By 2010, they'll probably do 250 m.p.g., providing a 10-fold improvement on today's average.

Car Share members might use a Volkswagen One Liter for 80 percent of the trips for which they don't use an EV, while private drivers might use them for 20 percent. We're down to 3 percent of the original oil we were using, or 3.7 billion gallons a year.

**97 percent less fuel**

### Pause for Breath

What we have here is a series of changes that produce incredible results. We reduced our need for car-based trips by 50 percent and used EVs for half the remaining trips. For the remaining 25 percent of our trips, we used hybrid EVs that are 85 percent more efficent than today's cars for half of them and smart cars, which are 90 percent more efficient than today's cars, for the other half. Altogether, these steps reduced our liquid fuel needs by 97 percent.

We now have to add the buses. Today, they use 1 percent of the transport oil (2.1 billion gallons). This could be cut in half with a hybrid electric drive. Add fuel for the big increase bus ridership in Step 5, and the total comes to just 2.23 billion gallons. Add the 3.7 billion gallons we need for personal vehicles and we need about 6 billion gallons to get around. Can we find a replacement for that remaining oil?

# 10 biofuels

When ethanol is made from crops grown specifically for fuel, such as corn, its energy balance shows a possitive return of 26 to 33 percent. When cellulosic ethanol is made from grass crops and farm residues that would otherwise be burned, however, its return is 79 percent, without diverting production from food. The Minnesota-based Institute for Local Self Reliance estimates that cellulosic crops could produce 10 to 20 billion gallons a year.

Biodiesel has won fame and popularity through the Veggie Van, and other adventures. It can be

made from corn oil, canola oil, cottonseed oil, mustard oil, palm oil, restaurant frying oils, animal fats, restaurant trap grease, and algae. The combined U.S. production of vegetable oil and animal fats, if it were all diverted, could produce 4.64 billion gallons a year. The National Renewable Energy Laboratory has estimated that 4 billion gallons could be produced from mustard oil.

Michael Briggs, in the University of New Hampshire's Biodiesel Group, calculates that if we grow algae on waste streams such as sewage at treatment plants or animal farms, or build large algae farms in a salty environment such as the Salton Sea, or the Sonora desert in southern California, the algae could produce a billion gallons of biodiesel a year from every 20,000 hectares, using sea-water and sunshine.

There are other biofuels, too. Zurich, Switzerland, runs 1200 vehicles on Kompogas from composted organic kitchen and yard wastes (see page 33). One ton produces 17 gallons of fuel, and a typical city produces 0.174 tons of organic waste per person per year, which could make 3 gallons of biofuel. If every community in the U.S. composted like Zurich, this could produce 0.9 billion gallons of biofuel a year.

Changing World Technologies is developing a technique called thermal depolymerization, which mimics the process that converts forests and swamps into fossil fuels. Using this process, Changing World estimates that America's agricultural wastes could

The Volkswagen One-Litre, a two-seater prototype that's been on the roads in Europe, does 237 m.p.g. You read that right

*Yoshikazu Tsuno/AFP/Getty Images*

## Pay as You Drive

**Carolyn McConnell**

Ever feel like a sucker for leaving your car in the driveway? Once you've got a car paid for and insured, even with rising gas prices, each trip is pretty cheap. Usually it's cheaper than taking the bus and a lot less work than riding a bike. So you might as well drive, you say as you head to work or the grocery store or the park.

What if, instead of paying all those costs before you ever drove a mile, you had to pay part of them each time you drove, and the more you drove the more you paid? Chances are you'd choose the bus or the bicycle or even your feet a lot more often.

What if we bought insurance not by the year but by the mile actually driven? In Texas, this idea is one step closer to reality since legislators in 2002 passed a law encouraging insurers to offer "pay-per-mile" insurance. Here's how it would work: Say you start out with your odometer at 15,000 miles. If you buy 5,000 miles worth of insurance, you receive a card that shows you're insured to 20,000 miles. Once a year you bring the car to the insurance company to check the odometer. Now you not only have an environmental incentive to keep your driving down—you also have a financial incentive.

It's not just environmentalists who would win, says Patrick Butler, director of the Insurance Project of the National Organization for Women, which has led the push for this kind of insurance. Women on average pay about twice as much per mile for car insurance as men, because they drive much less, he says. Older drivers, who on average drive less than younger drivers, also are overcharged.

Butler argues that pay-per-mile insurance would reduce the number of uninsured drivers, since low-income people could get low-cost insurance only for the trips they absolutely have to make. A win for women, for older people, for the poor, for environmentalists, and for the planet—or it will be, if insurers actually offer this insurance. NOW advocates stronger legislation requiring them to do so.

For more information, see www.centspermilenow.org.

produce 168 billion gallons of biofuel a year. The process is 85 percent efficient, needing 15 percent of its output of energy to keep it going, reducing the net output to 143 billion gallons. The Philadelphia City Council is planning to use the process to treat the city's sewage, opening up another huge possibility to turn waste into fuel.

## 11 electricity

In this scenario, 25 percent of our personal trips are made in electric vehicles, and 12.5 percent in hybrid vehicles, which use electricity for 75 percent of their energy. Taken together, we'll need electricity for 34 percent of our mileage. Right now, those trips use 40 billion gallons of oil, enabling Americans to drive 1,000 billion miles a year at 25 miles per gallon (8,500 miles per household).

A typical car that is converted into an EV uses around 300 watt-hours per mile. An EV tested by the Department of Energy was rated at 164 watt-hours per mile. If a smart-EV used 100 watt-hours per mile plus 50 watts for the battery charging, those 1000 billion miles would require 150,000 billion watt-hours (150,000 gigawatt hours) of electricity a year. That's a very reachable target for renewable energy, as North Dakota alone has 1.2 million gigawatt-hours of available wind power potential, eight times more than we need. We would also need electricity for the trains and light rail.

With a technology mimicking the process that converts forests and swamps into fossil fuels, America's agricultural wastes could produce 168 billion gallons of biofuel a year

Alternatively, with just three hours of sunshine a day, a house in Seattle with a one-kilowatt photovoltaic system on a south-facing roof will generate 1095 kilowatt hours of electricity a year, enough to power a two-seater smart EV for 7,300 miles. The biofuel is available; the electricity is available. Suddenly, the whole endeavor to travel without oil begins to seem possible.

## 12 smart policies

The lexicon of policies that could accelerate the process of change is enormous, from transportation demand management to tax-shifting to smart growth land-use planning. This is policy wonk heaven: let's leave it at that.

### A Final Word

This has been a quick, back-of-the-envelope exercise, to explore the possibility of transport without oil. It ignored heavy trucks, which use 38 billion gallons of oil a year. If every truck used a hybrid drive, as the new FedEx trucks do, this would cut it to 19 billion gallons. As the price of oil rises, there'll be incentive for local production, so we can reduce the stupidity of shipping goods back and forth across the country and the world. A 20 percent reduction in shipping would reduce the fuel needed to 15 billion gallons.

Then there's flying, which uses 10 percent of America's transport oil (21 billion gallons a year). We've got to do a lot less flying. With a good electric train system, all trips under 400 kilometers would be faster and easier by rail, allowing 40 percent fewer flights, reducing the fuel needed to 12.6 billion gallons. If we cut our flying by a further 40 percent, by learning to live and travel more responsibly, that would reduce it to 7.5 billion gallons. Altogether, for heavy trucks and flying, we need 22.5 billion gallons. With the 6 billion gallons we need for personal travel, we need 28.5 billion gallons, still within the amounts of biofuel we demonstrated could be produced.

This exercise ignored the opportunities to save oil now used for commerce and industry, including to make vehicles (55.5 billion gallons a year), to heat homes (9.3 billion gallons a year) and to generate electricity (5.7 billion gallons a year).

We've also ignored the many benefits of embracing forms of sustainable energy. No more smog and smog-induced asthma. Less noise and way fewer road accidents. More exercise, more peace and quiet, more conversations with neighbors. The end of oil may seem scary to some, but from where I'm sitting, it looks as if it might work out just fine.

Guy Dauncey is co-author with Patrick Mazza of *Stormy Weather: 101 Solutions to Global Climate Change* (New Society Publishers, 2001), and president of the BC Sustainable Energy Association (www.bcsea.org). He lives in Victoria, BC, Canada.

China will soon surpass the U.S. in carbon emissions and fossil fuel consumption. Its immense population and rapidly growing economy make for an environmental timebomb. But a veteran China correspondent finds signs of a turnaround

Frederic J. Brown/AFP/Getty Images

# China's future, the world's future

**William Brent**

After an initial rush of excitement over writing a piece about China for *YES!*, a slow creep of dread and unease replaced the thrill. With global oil prices spiking because of China's rapacious growth in oil consumption and the country poised to replace the United States in the dubious role of world leader in carbon dioxide emissions, could I honestly write an article portraying as positive what is happening with China and fossil fuels?

My doubts were not erased, but amplified, after some initial phone calls to environmental leaders in China were met with long pauses when I asked for suggestions on positive stories.

But I was not deterred. I made a pact with myself—I would keep asking until I found something positive, and be honest about the complexities of China, while focusing on the light, not the dark.

China is important to me. I take what is happening there to heart. In many ways it is my home, and I am protective of it. I have spent nearly half of my life there, as a foreign correspondent and businessman from 1986 to 2002. During that time, I experienced what I consider to be one of the most dramatic periods of transformation in world history—from the brief ecstasy of free expression in the late 1980s and the might of totalitarianism in snuffing it out, to a shift toward capital markets and the massive spiritual, economic, and social changes that came with that shift, including the beginnings of civil society. (When the United States industrialized, it had fewer

than 80 million people, and it took around 40 years to do it. China has nearly 20 times that number of people, and it is industrializing at hyper-drive speed, manufacturing not only for itself but for the rest of the world.)

I believe it is essential that all of us not only understand what is going on in China, but that we become active agents for making it better. Unless we do something urgent, my two-year-old son will enter adulthood in a world neither he nor I want to contemplate.

When I first arrived in China, Beijing was one big bicycle lane, as was the rest of China. There were no private cars—no one had the money and even if they had, private car ownership was prohibited by the government. The few cabs on the road catered to the few foreigners who paid in the equivalent of U.S. dollars.

In less than 20 years, all that has changed. By the mid-1990s, the taxi population had hit 65,000, and private car ownership was not only allowed but it flourished. The quiet flow of bikes has been replaced by chaos in motion, albeit slow motion, since road infrastructure fails to keep pace with the number of vehicles and emissions often create a haze so thick it defines torpor.

China's GDP (gross domestic product) is about equivalent to that of California, but its carbon emissions are second in the world and on track to surpass U.S. emissions by 2025. In the east coast cities of China, there is now an 80 percent year-on-year increase in private auto sales. Every major auto manufacturer from around the globe is rushing to China to set up production lines. (A weekly e-mail newsletter I receive recently had DaimlerChrysler, Volkswagen, and Honda all announcing production plants for China—a typical week). China is now the world's second largest oil importer after the U.S. and expected to become the world's largest car importer within 10 years.

Coal, the main source of electricity in China, is wreaking havoc on the environment. Because of voracious electricity demand in industry and increasingly in homes, China is building two new coal-fired plants a week to try to meet its needs.

I'm not afraid to admit this information had a paralyzing effect on me. Where can the positive be?

## Economies of scale

Here's where optimism started to creep in: Although I am shocked by how few people inside and outside China are working on renewable energy in China given the magnitude of the problem, the past 18 months have resulted in a new sense among this small but growing community that change is possible, or more accurately, that change is unavoidable. As Jennifer Turner of the China Environment Forum at the Woodrow Wilson Center put it: "Things are starting to stick."

Even if China's central and local governments don't have a collective conscience pushing them to move to renewables for the good of the planet, they have no economic choice. The central government has acknowledged the clashes between peaking world oil production and China's burgeoning economy, and between maintaining growth and preserving public health. From here on in, the response will be a question of degree—and each degree will count.

The flip side of the statistics about China's massive thirst for fossil fuel is that because China is so huge, even modest adoption rates of solar, wind, hydrogen, and other renewables could mean the price of renewable energy and related technology drops globally. China could create previously unknown economies of scale. Imagine that.

China's national legislature is now pushing through a law that would promote renewable energy use, beginning as early as 2006. "Instead of just policies and regulations, this would elevate renewables to being law," says Wang Wanxing of the Energy Foundation, a U.S.-based group that has been at the vanguard of work with China on alternatives to fossil fuel.

According to Wang, China will have about 900 gigawatts of energy capacity by 2020, more than double what it had at the end of 2003. The government recently committed to having 120 gigawatts, or 13 percent of that, be renewable (China includes nuclear power as a renewable energy), including 20 gigawatts from wind (or half the current worldwide wind power capacity).

China is estimated to have about 250 gigawatts of potential wind capacity. Wind is proving to be an economical alternative to cheap and dirty coal, as a recent program along the coast has shown.

The government is encouraging private investment in wind power through the auctioning of wind concessions. Companies bidding on the first two concessions in September 2003 paid prices that were competitive with the cost of electricity from a new coal plant. The experiment is being expanded to include three more concessions, leading me to envision a "ring of wind" circling the country from the south in Guangdong province north to Inner Mongolia,

and west to Xinjiang. In a relatively short time, a completely new mechanism for encouraging investment in wind power has already created half a gigawatt of new capacity. It may be a fraction of the 35 to 40 gigawatts of additional installed capacity that China requires each year, but it still represents a huge advance. According to Wang, "The government has put wind high on the agenda for development."

## Smarter transportation

For such changes to matter, China must figure out how to balance a desire to make the automotive industry a cornerstone of economic prosperity with preventing a greenhouse gas nightmare. Recent moves by several major Chinese cities to ban bicycles from downtown streets to provide more room for cars is a sign of this pull toward car culture. Yet many of the same cities are exploring ways to boost mass transit, especially bus rapid transit (BRT), which creates dedicated lanes for buses to go station-to-station with subway-like efficiency.

The Chinese government froze continued funding for subway and light rail in 2003 because of expense. By doing so, it left every big city mayor in China in a quandary, faced with a huge and growing demand for vehicles and a standstill in road infrastructure. "How do you move people in the megacities of the world, especially China? Private cars won't work, and subways are too expensive," says Doug Ogden, also of the Energy Foundation, which is helping spearhead the BRT effort in six cities.

"Two years ago the BRT concept was unknown in China," Xu Kangming told me. Xu is shuttling around the country working to convince cities to adopt BRT. His efforts are succeeding. "More and more cities are starting to do some preliminary planning and explore the opportunity to implement BRT."

Among cities adopting or seriously considering BRT are Beijing, Kunming, Xian, Shanghai, Chongqing, and Chengdu, whose metropolitan areas together encompass 75 million people. Other smaller cities such as Changzhou and Yangzhou in Jiangsu are also adopting BRT though collaborations with Germany. Advocates of BRT are hoping Beijing and Shanghai will serve as working models for other cities to learn from and emulate.

Beijing wants a big chunk of its BRT system in place in time for its hosting of the 2008 Olympics. It is currently building a 15.6-kilometer corridor in the city's southeast corner, scheduled for completion at the end of this year, with plans for 300 more kilometers over the next several years.

Beijing already has one of the largest compressed natural gas (CNG) bus fleets in the world, and it has set a goal of converting 90 percent of its 11,000 buses to CNG by 2008. There are moves in China to introduce hybrid electric engines into buses, which could be converted to use fuel cells.

When I first started studying China 20 years ago, I took a short class from professor Jonathan Chaves, and he pointed out to me something that I had never stopped to notice. When you look at classical Chinese painting, amid the craggy mountains and wind-swept clouds and mist, any people that are depicted are a small part of their surroundings. You have to look hard to spot the people in the paintings—very different from most Western painting, in which the individual is the center of attention. I take hope from that, and believe that the Chinese will demonstrate enlightenment by drawing on the best parts of their long heritage, while learning from our short one to avoid making the same mistakes.

When I called Elizabeth Economy, author of *The River Runs Black: The Environmental Challenge to China's Future,* she held out hope, too, despite the darkness of the book's title. "The most important thing that is happening is the rise of NGOs and civil society in China. … The burden and opportunity both are with the citizen and the media, and that's where you see the broadest change. That's where I see the greatest hope and greatest excitement."

Though they are in their infancies, a number of environmental NGOs have appeared in China since the late 1990s. They include the awareness group Global Village, Green Student Organizations, the volunteer legal aid group Grassroots Community, and Greenroots Power and Snowland Great Rivers and Environmental Protection Association, both aimed at protecting rivers. Many others are emerging. Liang Congjie, one of the first environmental activists in China and founder of Friends of Nature in 1996, said, "It sometimes may not seem like much, but it's a seed."

Translating policy into action at the local level, where city governments tend towards myopic self-interest, is crucial. The rise of civil society at the local level will provide a bottom-up dynamic to the traditionally top-down Chinese system.

"The environment," Economy says, "is at the forefront of the rise of civil society in China."

William Brent was a reporter and editor for Agence France Presse in China. He is director of talktoUS.org (see page 60), and partner in the Shanghai media company Cinezoic.

Students at the University of Colorado and residents of Boulder partner with sustainable community Gaviotas to bring biodiesel technology to Colombia

photo courtesy of Martin Stenflo of the Boulder Biodiesel Cooperative

Students and other residents of Boulder traveled to Bogotá to share the secrets of making biodiesel

# bringing biodiesel from Colorado to Colombia

**Brian Edstrom**

Nestled on the barren, politically volatile plains of eastern Colombia lies an epicenter of inspiration and hope for those committed to making sustainable technology and practices a working reality. The people of Gaviotas—some 200 scientists, engineers, and former street kids—generate electricity using windmills and solar collectors and grow their own food using organic techniques. They even tap into the energy of children's play by hooking up a pump to a schoolyard seesaw. In addition, Gaviotans have planted 36,000 acres of trees in the thin, nutrient-depleted soil, thereby sheltering re-emerging plants and animals indigenous to an area once roofed by a tropical canopy that may have stretched as far as the Amazon. (See more on Gaviotas in *YES!* Fall & Winter 1998 and Winter 2004.)

For nearly 33 years, however, Gaviotas has relied on diesel trucked in across the plain to fuel the community's small fleet of tractors and vehicles. When Gaviotans learned that students and resident from

Boulder, Colorado, had been converting vehicles to biodiesel, they jumped at the opportunity to try out a more sustainable, locally available alternative, and invited the young people to Colombia to help design and build a biodiesel processing plant.

## Boulder Biodiesel

How did Boulder become a center for biodiesel innovation? In the fall 2002 semester, Andrew Azman, then a 21-year-old environmental engineering student, enlisted several other CU students to design and build a biodiesel processor on campus to convert waste grease from the campus dining halls. CU Biodiesel was born.

"My inspiration for the biodiesel project came from a feeling of despair in escaping the claws of the petroleum industry," says Azman. "Before starting CU Biodiesel, I had worked on numerous other environmental campaigns, but most were based around negativity towards governmental policies and corporations. Biodiesel was a solution I could offer to the community."

Azman quickly built connections with other Colorado-based biodiesel users. Among them were fellow student Evan Belser, who has since served as co-director of CU Biodiesel, and Martin Stenflo of the Boulder Biodiesel Cooperative. With the support of their city and campus communities, Azman, Belser, and Stenflo helped 100 Boulder residents switch to biodiesel for their personal vehicles. They've done the same with several Boulder city vehicles and all 13 of CU–Boulder's campus buses.

In October 2003, Gaviotas' founder, Paolo Lugari, spoke at a Sustainable Resource conference held in Boulder. There he was introduced to Stenflo and Azman, and he quickly saw that biodiesel could have deep implications for not only Gaviotas, but for all of Colombia. Lugari invited members of the Boulder biodiesel community to Bogotá to help design and build a biodiesel processing facility.

Biodiesel is made by combining vegetable oil or animal fat with methanol and a small amount of lye. Most diesel engines can run without modification on pure biodiesel or biodiesel-diesel mixes. Most commonly, vehicles run on B20, a blend of 20 percent biodiesel and 80 percent petroleum diesel. The fuel can be created using virgin vegetable oil or by recycling used oil from restaurants or cafeterias, making it a sustainable alternative to fossil fuels. Although the resulting exhaust may smell like doughnuts or french-fries, biodiesel emits far less sulfur dioxide, carbon dioxide, and unburned hydrocarbons than petroleum diesel.

## Gaviotas

In April 2004, after six months designing and preparing to build the processor, a team of six CU students and Colorado residents—Stenflo, Belser, John Bush, Melanie Zaucher, David Biwosky, and Nicholas Helund (all of them in their 20s)—arrived at Centro Las Gaviotas, a Bogotá-based organization that supports the community of Gaviotas and similar projects. For two weeks, the Coloradoans teamed up with a Colombian electrician, a plumber, and a welder to build the biodiesel processor. Less than a month later, construction was completed.

Stenflo and Belser anticipate that the Bogotá processor will produce 400,000 gallons of biodiesel a year. The Colombian-American team hopes this mid-sized facility will create new jobs, stimulate the rural economy, and allow local, sustainable fuel production to continue even as international oil supplies dwindle.

Biodiesel production does not require trained engineers or complex machinery. The team has successfully trained a Colombian man with only fourth-grade education to be the Bogotá facility's plant manger. Using this facility as a model, the plant manager will teach others how to produce the fuel, encouraging farmers and vehicle owners to develop their own "micro-brew" biodiesel processing facilities throughout the county.

## Biodiesel pros and cons

Biodiesel brings the benefits of reducing reliance on oil, but it carries its own challenges. Biodiesel doesn't perform as well as other fuels in cold temperatures, and, although it is friendlier to the environment than petroleum diesel on most counts, biodiesel emits a higher level of nitrous oxide. Most problematic, biodiesel still remains an expensive alternative to diesel fuel.

But Stenflow points out that many of these obstacles can be overcome with adequate infrastructure and stronger governmental support. And the benefits of biodiesel outweigh the shortcomings. Even with increased nitrous-oxide emissions, biodiesel is the only alternative fuel to have fully met the health-effects testing requirements of the Clean Air Act. Plus, biodiesel is the only alternative fuel that does not require the purchase of a new vehicle, so it can help fuel the millions of diesel vehicles that are on the roads right now.

Large-scale production of biodiesel is slowly catching on in the United States. According to the National Biodiesel Board (www.biodiesel.org), as of May 2004, 400 major U.S. fleets have begun to use biodiesel. Included on the list are Yellowstone and Yosemite national parks, public school districts, utility companies, NASA, and all major branches of the U.S. military. One of Colorado's first and largest users of biodiesel has been Peterson Air Force Base, located in Colorado Springs.

"This is not just about the environment and health," says Stenflo. "It's also about stimulating local farmers and local economies, and creating American jobs. Each gallon [used by the Peterson base] is 100 percent American."

Likewise, each gallon produced at the facility in Bogotá will be 100 percent Colombian. The fuel will be created primarily from locally grown palms. According to Stenflo, one acre of palm trees can yield enough fruit to produce about 200 gallons of oil per year—five times as much as the soybeans or canola grown in Colorado for biodiesel. And one gallon of crude palm oil can be converted into nearly one gallon of biodiesel.

Three thousand gallons of the biodiesel produced in Bogotá this year will be reserved for use in Gaviotas. Gaviotans have taken biodiesel technology one step further, by modifying at least one tractor engine to run on straight, unprocessed palm oil. Lugari and his fellow Gaviotans have begun planting a variety of palms, hoping soon to fuel community vehicles with community fuel crops.

Should biodiesel production be successful in Colombia, however, Gaviotans may face a new challenge: how to prevent fuel crop production from competing for land and water with food crop production. With farmland and forests already burdened by overuse, there are limits to how much land can be made available to production of oil crops for biodiesel without compromising food security.

Stenflo, Azman, Belser, and their peers realize that members of their generation will be at the center of the looming oil crises. They have joined Lugari and fellow visionaries at Gaviotas in embracing the inevitable transition to alternative sources of energy.

"Perhaps, eventually the energy industry will shift to renewables because all the traditional sources for fossil fuel are exhausted or because the renewable technologies offer a higher potential for profit," Belser says, "I prefer not to wait, but to work for this shift."

Brian Edstrom is a former *YES!* intern, a graduate of Colorado College, and a teacher of English in China.

## whatever it takes

**Michelle Burkhart**

Bo Lozoff started out with a simple idea: reach out to prison inmates through the Prison Ashram Project, teach inmates to do yoga and meditation, and stay in touch with them as they struggle through the rigors of a spiritual journey behind bars.

Lozoff became a correspondent and teacher for hundreds of thousands of inmates, but when his incarcerated students were released, it became clear to Lozoff and his wife Sita that the ex-convicts would need a place to go. The two opened "Kindness House," a spiritual community and farm located between Durham and Greensboro, North Carolina, that welcomes people leaving prison.

Lozoff soon saw that even the hospitality of Kindness House was not enough. People leaving prison need jobs. Employers are reluctant to hire a felon, and few ex-convicts have the work experience employers want.

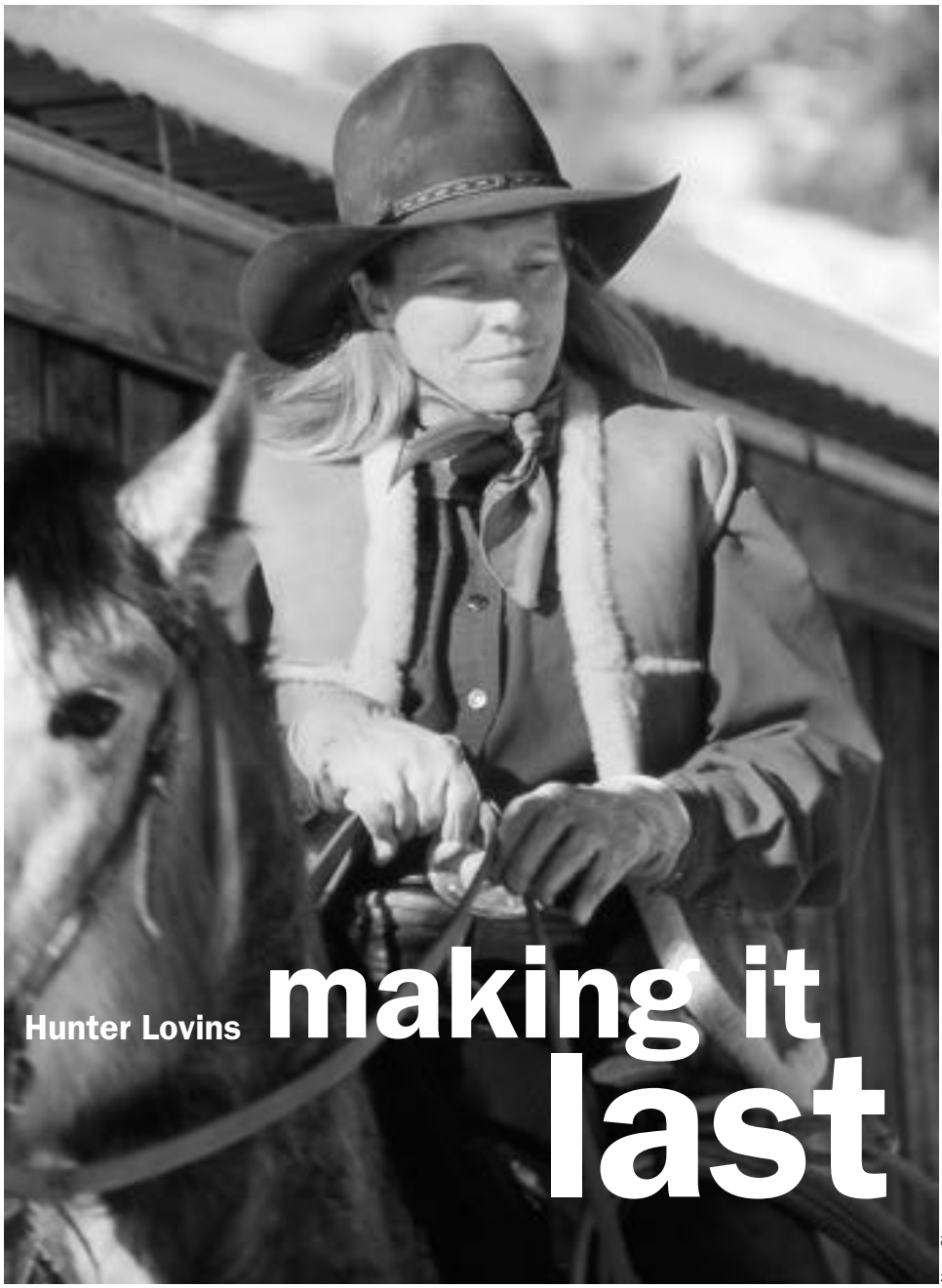
Then, a year ago, a friend decided to sell his factory. "Suddenly," Lozoff says, "we had a 10,000-square-foot factory on five acres of land." The job-training program they had hoped to get to "someday" became imminent.

North Carolina currently imports more than 1 million gallons of soy diesel from Iowa each year for use in school buses, fire engines, and other vehicles, so a local, lower-cost biodiesel plant seemed like the way to go. Lozoff's group, the Human Kindness Foundation, decided they would make biodiesel out of used cooking oil from restaurants.

Carolina Biodiesel Incorporated was born and now has the factory, biodiesel experts poised to assist, a pool of job-trainees, and local government support. The only missing piece is the $1 million needed to buy equipment.

Lozoff says he will raise the money through selling his music CD, *Whatever It Takes*. Although the CDs are not selling at the rate he had hoped, Lozoff remains undaunted. "There is nothing you have to do to make the Tao happen," he says. "Once you sense what the Tao is, you follow it."

Lozoff is the author of *We're All Doing Time*. Learn more about Lozoff, The Prison Ashram Project, the *Whatever it Takes* CD, and Carolina Biodiesel Inc. at www.humankindness.org.



Norm Clasen

## Hunter Lovins

# making it last

Hunter Lovins helped found and manage the Rocky Mountain Institute, famous for turning conventional wisdom about energy on its head. She's still changing minds in the worlds of business, nonprofits, and government, showing a more sustainable path to prosperity

Anyone remotely aware of world events realizes that it is time to quit nibbling at the bullet and get off our dependence on oil. The United States imports 11 million barrels of oil each day, more than half of our 20-million-barrel daily habit. At $40 plus a barrel, we're spending more than $800 million a day to import oil. The carbon emissions from burning all this fuel amount to about 600 million metric tons. The cost of the war in Iraq is more than $1 billion per week.

But is it possible to get off oil?

Yes, it is possible. The key notion that makes getting off oil possible is counter-intuitive: the best and cheapest "source" of energy is not in fact supply, but efficiency. Any effort in these directions will save money, increase American national security, and help protect the environment.

Isn't author Paul Roberts right that we have reached "The End Of Oil?" as his book title suggests? It is a corollary of the round-earth theory that we will run out of the stuff, ultimately. But in the meantime, there simply is a huge scope for using less of it.

## Prospecting for an energy future

For several decades, more efficient use has been the biggest source of new energy—not oil, gas, coal, or nuclear power.

More efficient use of energy enabled Americans after the 1979 oil shock to cut oil consumption 15 percent in six years while the economy grew 16 percent. These efficiencies were achieved by more productive use of energy (better-insulated houses, better-designed lights and electric motors, and cars that are safer, cleaner, more powerful, and get more miles per gallon). By 2000, the energy service provided by that increased efficiency was 73 percent greater than total U.S. oil consumption, five times domestic oil production, three times all oil imports, and 13 times Persian Gulf oil imports. Since 1996, saved energy has been the nation's fastest-growing major "source" of energy.

In nearly every case, energy efficiency costs far less than the fuel or electricity it saves. It costs only about 2 cents per kilowatt hour to save energy. (Once we've made the easy savings, those costs will go up. However, up to half the energy now used could be saved for that price.) Almost no form of new supply, and few historic ones, can compete with this.

The 40 percent drop in U.S. energy intensity (energy consumption per dollar of real GDP) since 1975 has barely dented the potential. The U.S. annual energy bill is about $200 billion lower today than it would have been had we not improved energy efficiency. Yet we are still wasting at least $300 billion a year, and the potential savings keep rising as smarter technologies promise more and better service from less energy. What's even better is that while the side effects of increasing supply are almost uniformly harmful, the side effects of efficiency are beneficial. For example, studies show labor productivity is 6 to 16 percent higher in energy-efficient buildings.

It is a corollary of the round-earth theory that we will run out of oil, ultimately. Meantime, there is a huge scope for using less of it

## Efficiency just keeps on winning

Markets are motivated by price, information, and consumer values. After 1979 there was a perception of crisis. Energy prices spiked. People sought information. When the government, utilities, and various non-profits supplied it, the market mechanisms worked rapidly to "solve" the energy crisis. Efficiency brought demand down, and prices crashed.

Those advocating development of new sources of energy supply were back at square one, the falling price of oil having diminished the relative attractiveness of their pet technologies compared to energy efficiency, which can be implemented more quickly and at lower cost.

This persistent oscillation has repeated itself at least four times since the 1973 Arab Oil Embargo, and will do so again. This fuel bazaar will continue to result in bankrupt supply companies, energy vulnerability, a climate that grows less stable by the year, and continued war in the Middle East.

Avoiding this cycle of boom-and-bust requires understanding its three root causes:

- Efficiency costs far less than energy supply, so given the choice, most people "buy" it instead.
- Policies that promote both efficiency and supply risk getting both—customers will typically use only one (usually the cheaper one), idling the other.
- Efficiency measures are faster to implement than new supply. Ordinary people are able to implement efficiency long before big, slow, centralized energy generation can be built, let alone paid for.

## How not to make energy policy

The best way to get off oil and implement an energy policy that will give us abundant affordable supplies of energy is to use what we already have dramatically more productively.

The last time this approach was tried, the imposition of CAFÉ (Corporate Average Fuel Efficiency) standards for vehicles enabled the country to reduce oil purchsing faster and on a larger scale than OPEC could adjust to. New U.S.-built cars increased efficiency seven miles per gallon in six years. Europe achieved similar savings through higher fuel taxes. Together these changes tipped the world oil market in buyers' favor. Between 1977 and 1985, U.S. oil imports fell 42 percent, depriving OPEC of one-eighth of its market. The entire world oil market shrank by one-tenth; OPEC's share was cut from 52 percent to 30 percent, driving down world oil prices. The U.S. alone accounted for one-fourth of that reduction.

Between 1979 and 1986, Americans cut total energy use 5 percent—an intensity drop that was five times greater than the expanded coal and nuclear output subsequently promoted by President Reagan's policy.

Upon entering office in 1981, Reagan sought to stimulate fossil fuel and nuclear energy supplies without realizing that prior efficiency efforts were already enabling the U.S. to cut energy intensity at the record pace of 3.5 percent per year.

Five years later, energy efficiency—disdained as an intrusive sacrifice and a distraction from America's supply prowess—had eliminated the demand that was supposed to pay for costly supply expansions. Many of the producers Reagan intended to help were ruined, as efficiency's speed and availability made energy prices crash in the mid-1980s.

Despite Reagan's concerted campaign to undo efficiency programs, by the mid-1980s, entrepreneurs were bringing on myriad technologies that led to a huge gush of efficiency. Advocates of renewable supply were similarly caught off guard, hampered, too, by inept government programs to subsidize renewables. But the real determinant was that efficiency was simply cheaper than any form of supply.

This history echoed eerily in 2001 as the Bush administration sought with similar ardor to stimulate energy supplies, even though in 1996 the United States had quietly resumed saving energy at the rate of 3.2 percent a year. They called again for opening the Arctic National Wildlife Refuge and proposed massive fossil and nuclear subsidies. Subsidies and other encouragement for gas-guzzling cars had reduced average fuel efficiency of U.S. cars and trucks to a 22-year low in 2002: 20.4 m.p.g. The average fuel efficiency of Ford cars and trucks is now worse than when the company started 100 years ago with the Model A.

In 2001, the U.S. National Academy of Sciences reported that cost-effective efficiency efforts could roughly double U.S. fleet efficiency without compromising safety or performance.

It is tempting to say that the recent run-up in prices will finally drive even fans of SUVs to rethink their addiction.

It won't.

As the price gets higher—and somewhere over $30 a barrel is enough to get people's attention—substitution begins to occur. With the lessening of demand, price begins to drop. As prices fall, people are all too happy to resume apathy.

Moreover, advertising campaigns (and tax subsidies) that encourage Americans to buy a 10 m.p.g. Hummer2 so that they can paste an American flag on it and feel that they are patriotically supporting the troops, ensure that young men and women will yet again be placed in harm's way, driving 0.5 m.p.g. tanks and 17 feet-per-gallon aircraft carriers.

While American car companies resist making their products more fuel-efficient, the Japanese and Europeans are designing the future. The Toyota Prius hybrid-electric 5-seater gets 48 m.p.g.; Honda's Insight gets 64 m.p.g. If all Americans drove cars that efficient, we would save 32 times the amount of oil that proponents of drilling in the Arctic wilderness hope to find there. Daimler Chrysler and General Motors are testing family sedans at 72 to 80 m.p.g., and Volkswagen sells Europeans a 78-m.p.g. four-seat non-hybrid subcompact.

Almost every automaker at the recent Tokyo Auto Show displayed good hybrid-electric prototypes, some getting 100-plus m.p.g. VW has just premiered an ultra-light but super-safe diesel car that gets 237 miles per gallon.

## Catching hold

There is a lot of progress underway, much of it happening because of concern over climate change, not because of oil prices, but the two go hand-in-hand.

- In 2000 British Petroleum became one of the first major companies, and the first oil major, to announce a commitment to reduce its emissions of carbon dioxide by 10 percent below 1990 levels by 2010. In 2002, BP announced it had

already achieved this goal—eight years ahead of schedule. Doing so is saving the company $650 million, and senior officials now say that even if doing it cost them money, it would be worthwhile because it makes them the kind of company that the best talent wants to work for.

- DuPont has set itself the goals of reducing its greenhouse gas emissions by 65 percent and getting 10 percent of its energy and 25 percent of its feedstocks from renewables by 2010.
- STMicroelectronics went them even better, announcing a goal of zero net $CO_2$ emissions by 2010 with a 40-fold increase in production. By the time they're done, they reckon they will have saved almost $1 billion. This commitment has driven corporate innovation, taking them from the number 12 chipmaker in the world to the number six.
- Swiss Re, the major European re-insurer, is saying that if your company does not take its $CO_2$ footprint seriously, our company may not want to insure you. Or your officers or directors.

Perhaps the most exciting news is the recent creation of the Chicago Climate Exchange. When it became clear that the U.S. Senate would refuse to ratify the Kyoto Protocol, many of us who favor market-based solutions to environmental problems felt gloomy. Richard Sandor, who describes himself as a humble economist, refused to give in to the despair. He said, "Governments don't make markets, traders do. I'm a trader, let's make a market."

And he's done it. On December 12, 2003, the Chicago Climate Exchange (CCX) started to trade the right to emit carbon; as of July 21, it was trading at 98 cents a ton.

The original 14 companies who joined were not a bunch of wooly-minded environmentalists. They included American Electric Power, Ford Motor Company, STMicroelectronics, Dupont, Motorola, and the City of Chicago, significant economic players, all.

Although in the U.S. the right to emit carbon is still free, these companies were betting that international regulations of carbon emissions were coming soon and they would be better off preparing for it. All felt, with Richard, that this was an opportunity to use the market to help solve what is now being called the most challenging problem facing the planet.

Hunter Lovins is the co-author, along with Amory Lovins and Paul Hawken, of *Natural Capitalism: Creating the Next Industrial Revolution*, and a consultant on these issues. She can be reached through Natural Capitalism Incorporated, www.natcapinc.com

## The Doubling Effect

**Evar Nering**

When I discussed the exponential function in the first-semester calculus classes I taught, I had no trouble finding real-world examples. The best example of an exponential function is nonrenewable natural resources. Suppose, I said to my students, we have a supply of a resource, say oil, which at our current rate of use will last 100 years. But suppose that rate grows by 5 percent each year. How long would it last in this case? About 36 years.

Perhaps we underestimated our supply of oil. Suppose we have a 1,000-year supply, if used at a constant rate. At the annual 5 percent growth rate how long will it last? 79 years.

Maybe we're really lucky and we find enough oil to last 10,000 years, at a constant rate of use. How much time does that expanded supply buy us, if our use grows at 5 percent? 124 years—not 100 times as long, but only about 3.5 times.

The real-world moral of this simple mathematics lesson is that we will not solve our need for oil by expanding supplies. If use is allowed to grow steadily, doubling the supply does not buy us as much time as reducing the growth rate of consumption by half.

Doubling the size of the oil reserve will add only 12 years to the life expectancy of the supply, if we continue to use oil at the same expanding rate. But halving the rate of growth of consumption will almost double the life expectancy of the oil supply, no matter how much oil there turns out to be.

Mathematical logic and the physical fact that ours is a finite world are enough to show that those who dismiss conservation as a solution to our energy crisis and instead promote expanding supplies have it precisely backwards. Indeed, drilling in our wild lands and boosting pumping in the Middle East are precisely the wrong things to do because they encourage more use. Even driving more efficient cars is no solution if we drive more.

The only way to avoid crisis is to reduce growth in energy consumption to zero, or even to reduce our consumption.

Evar Nering is professor emeritus of mathematics at Arizona State University and lives in Scottsdale, Arizona.

can we live without oil?

# nuclear power is the only green solution

**James Lovelock**

Sir David King, the British Government's chief scientist, was far-sighted to say that global warming is a more serious threat than terrorism. He may even have underestimated, because, since he spoke, new evidence of climate change suggests it could be even more serious, and the greatest danger that civilization has faced so far.

What makes global warming so serious and so urgent is that the great Earth system, Gaia, is trapped in a vicious circle of positive feedback. Extra heat from any source, whether from greenhouse gases, the disappearance of Arctic ice or the Amazon forest, is amplified, and its effects are more than additive. It is almost as if we had lit a fire to keep warm, and failed to notice, as we piled on fuel, that the fire was out of control and the furniture had ignited. When that happens, little time is left to put out the fire before it consumes the house. Global warming, like a fire, is accelerating and almost no time is left to act.

So what should we do? We cannot continue drawing energy from fossil fuels and there is no chance that the renewables, wind, tide, and water power can provide enough energy and in time. If we had 50 years or more we might make these our main sources. But we do not have 50 years; the Earth is already so disabled by the insidious poison of greenhouse gases that even if we stop all fossil fuel burning immediately, the consequences of what we have already done will last for 1,000 years. Every year that we continue burning carbon makes it worse for our descendants and for civilization.

If we burn crops grown for fuel this could hasten our decline. A car consumes 10 to 30 times as much carbon as its driver; imagine the extra farmland required to feed the appetite of cars.

Only one immediately available source does not cause global warming and that is nuclear energy. True, burning natural gas instead of coal or oil releases only half as much carbon dioxide, but unburnt gas is 25 times as potent a greenhouse agent as is carbon dioxide. Even a small leakage would neutralize the advantage of gas.

The prospects are grim. As individual animals we are not so special, and in some ways are like a planetary disease, but through civilization we redeem ourselves and become a precious asset for the Earth; not least because through our eyes the Earth has seen herself in all her glory.

Opposition to nuclear energy is based on irrational fear fed by Hollywood-style fiction, the Green lobbies, and the media. These fears are unjustified, and nuclear energy from its start in 1952 has proved to be the safest of all energy sources. We must stop fretting over the minute statistical risks of cancer from chemicals or radiation. Nearly one third of us will die of cancer anyway, mainly because we breathe air laden with that all-pervasive carcinogen, oxygen. If we fail to concentrate our minds on the real danger, which is global warming, we may die even sooner, as did more than 20,000 unfortunates from overheating in Europe last summer.

Even if those opposed to nuclear power were right about its dangers, and they are not, its worldwide use as our main source of energy would pose an insignificant threat compared with the dangers of intolerable and lethal heat waves and sea levels rising to drown every coastal city of the world. We have no time to experiment with visionary energy sources; civilization is in imminent danger and has to use nuclear—the one safe, available, energy source—now, or suffer the pain soon to be inflicted by our outraged planet.

James Lovelock is an independent scientist and the creator of the Gaia hypothesis of the Earth as a self-regulating organism.
This article was first published in *The Independent,* May 24, 2004. Reprinted with permission. Photo by J. Kamien/UNEP.

# nuclear is no solution

**Cameron M. Burns**

James Lovelock's assessment that carbon dioxide is a dire problem that we must start addressing immediately is correct. But Mr. Lovelock's solution—nuclear energy—is flawed. Here's why:

**Accidents.** While the worst nuclear accidents are emblazoned on the minds of millions, there have been more big ones than you probably know: Chalk River (1952), Greifswald (1976), Three-Mile Island (1979), Chernobyl (1985), Monju (1995), Tokaimura (1999), for starters. While only 31 people died immediately from radiation at Chernobyl, an estimated 3 billion people received some radiation exposure, and one estimate suggests that accident will ultimately cost 16,000 lives. There is evidence that even normally functioning nuclear plants have harmful health effects; one study found that infant deaths and childhood cancer rates around nuclear plants dropped after they closed (see *YES!*, Spring 2003). Any accidents with windmills and solar arrays are minor and local, whereas nuclear's effects are wide and long-term. And then there's the possibility of terrorist acts involving nuclear plants.

**Nuclear Waste.** If anyone has a solution to this problem, please let it be known. Despite trying for decades and spending billions, the U.S. government has been unable to create safe storage for nuclear plant waste, which stays highly radioactive for thousands of years.

**Economics.** Nuclear power plant catastrophes are potentially so enormous that insurance companies won't fully insure the plants—they are insured by the federal government, which is to say by taxpayers. While many tout nuclear electricity as comparable in price to gas- and coal-generated energy, this is so only for operational costs—capital costs push nuclear power to the edge of fiscal sanity. And then there are the costs of dealing with the waste and decommissioning the plants at the ends of their lives, both of which cost hundreds of millions of dollars.

**Energy Delivery.** Because it is both less expensive and more reliable, we should be striving toward energy decentralization. But nuclear plants are big and centralized. They rely on the grid, where most outages now originate. Decentralized generation (such as small gas turbines, renewables, and fuel cells) is quick to build at just the right size, so utilities no longer have to predict energy use decades in advance to ensure future supplies.

**Carbon Dioxide Emissions.** Mining, transporting, building the facilities, and enriching nuclear fuel is all done with fossil-fuel-powered machines, and ore quality determines how much energy is used to prepare the fuel. In a 2003 study, Dutch researchers found that below a certain ore grade, the mining and milling process consumes more energy than the uranium generates in a nuclear power plant. Their calculations (see www.oprit.rug.nl/deenen) show that unless rich ores are used, electricity from nuclear systems may consume more fossil fuel and emit more carbon dioxide than deriving electricity directly from the fossil fuel. They estimate that if we got all of our electricity from nuclear power, the world supply of rich ore would last three years.

**There is an alternative.** In 1976, Amory Lovins of the Rocky Mountain Institute (my boss) suggested that efficiency improvements could supply 46 percent of the demand projected for 2000. In 2000, efficiency met 50 percent of forecasted demand. If public policy were to keep up with technology, efficiency could meet a large amount of future needs. Using efficiency, renewables, better government policies (such as levelling the playing field for technnologies by removing the unequal subsidies to fossil fuels and taxing carbon emissions), decentralized systems, and smart design, we can avoid global meltdown of either the nuclear or carbon dioxide variety.

Trained as an architect, Cameron M. Burns has written widely on energy and energy-related issues and currently serves as staff editor at Rocky Mountain Institute in Colorado.

Hope, says author David W. Orr, is not the same as wishful thinking. Hope recognizes hard realities, like the difficulty of inventing a new energy future, but chooses to act anyway. Here are 10 reasons to be hopeful

**David W. Orr**

# the hour before the dawn

Martin Bond

Recently I participated in a conference to assess the "state of the world." I was sixth on a list of speakers, each of whom presented well-documented and plausible bad news ranging from global famine to abrupt climate change to worldwide terrorism or all of the above.

Gloom settled on the assembled like a dark cloud. I had intended to offer more of the same, but decided enough was enough. On the spur of the moment I began to list the legitimate reasons we have for optimism. I offer 10.

**One.** For 30 years or longer we environmentalists have been right on the big issues. Not always, but mostly. Rachel Carson was right about the effects of DDT and similar chemicals in 1962. Paul and Anne Ehrlich were right in 1968 about the possibilities for famine and ecological collapse; presently 1 billion people are malnourished, and whole ecologies have collapsed in Haiti, Ethiopia, China, and elsewhere.

The authors of the much maligned *Limits to Growth* were mostly right in 1972; there are limits to what we can do, beginning with overloading the ability of the Earth to absorb our wastes. E.F. Schumacher was right about the need for "appropriately scaled" technology. Amory Lovins was right in 1976 about the potential for greater energy efficiency and renewable energy sources, and we have come part way down that road against the determined opposition of the fossil-fuel industries and electric utilities.

In different ways, Randall Arendt, Jane Jacobs, Paul Hawken, Vaclav Havel, Jim Hightower, Wes Jackson, Bill McDonough, Ian McHarg, Vandana Shiva, John and Nancy Todd, Paul Wellstone, E.O. Wilson, and many, many others are right about better possibilities. It is not possible to organize the public business for long around hatred, fear, and resentment. There is some steady gravitational pull in the universe toward higher things.

**Two.** Public opinion polls show determined majorities over three decades favor clean air, clean water, open spaces, preservation of species, climate stability, less traffic congestion, and solar energy. There is no mandate to repeal the gains of the 20th century, although, as extremists of all kinds know, it is always possible to confuse, muddy the water and distort reality—but only for so long.

**Three**. There is the growing power of world opinion. The United States is now regarded by many around the world as a rogue nation engaging in state terrorism, but there are forces that will counter our arrogance and overreach. Ecological enlightenment, for one, has now grown to a global force multiplied by the Internet. How else but the Internet to explain the millions who protested the onset of war in Iraq? No matter the issue, there is a surge in public opinion in favor of a decent, peaceful, and sustainable world. I do not think this tidal wave can be stopped by any nation or any amount of military power.

**Four.** An economy organized around the convenience of the top 5 percent cannot be maintained for long. Tax cuts for the hugely wealthy, rising deficits, and militarization of the economy is a recipe for disaster. We do not have to rob the world and steal from our children to live well. There are better ideas for a truly prosperous economy waiting in the wings. By a similar logic, the organization of the global economy by the International Monetary Fund, World Bank, and the World Trade Organization is too closed, corrupt, destructive, and shortsighted to persevere. What we don't know is how it will end, whether in uprisings, collapse, reform or by some combination of these.

**Five.** The facts are on our side. The extremists now in power believe they can, rather like Stalin, match science to their personal predilections. It did not work for Stalin, and it will work no better for them. It is a fact that we are changing the climate and that this may lead to disaster. It is a fact that we are driving thousands of species to extinction, unraveling God's creation. It is a fact that we are losing soil faster than it can be regenerated and thus jeopardizing food security. It is a fact that toxic pollution is now global and undermines both human and ecological health. It is a fact that all oceans and fisheries are in peril and that forests roughly the size of Scotland disappear each year. And the fact is that a third of humankind live just at or below the point of decency. These facts are all well-known and well-documented, as are the technologies and policies that lead in better directions.

**Six.** Our technology is better than theirs. They have chosen to run the flag up the pole of nuclear energy, more fossil-fuel power plants, oil wells, coal mines, tax breaks for Humvees, to say nothing of smart bombs and Star Wars technology. They cannot do such things for long without bringing about economic ruin, endless wars, more terror, political turmoil, isolation, and finally, ecological collapse.

Meantime, there is a revolution underway built around the kinds of technology that power spaceshuttles, which are being applied to offices, factories, houses, and cars. It is a revolution that will take us toward a distributed energy system based on efficiency and progress in photovoltaics, fuel cells, wind power, and micro turbines. It can be slowed by shortsightedness driven by greed, but it cannot be stopped.

**Seven.** The course we are now on runs counter to our history and to our best traditions. At our best we are a people defined by documents such as the Declaration of Independence, the Constitution, and the Gettysburg Address. We do not have to be a rogue nation given to preemptive wars and assassinations. The fact that the historical record diverges so sharply in recent decades from our higher values says much about the role of secrecy in our national life, the profitability of what President Eisenhower deemed a "military-industrial complex," and the cynical manipulation of patriotism.

**Eight.** The world is more complicated than the neocons and the new imperialists would have it. Women are mobilizing. The Internet is connecting a global citizenry. Information is more available to those wishing to find it. There are more wild cards than ever before, which is to say the world cannot be controlled from the center, and no amount of military power can change that fact. Imperialism is a fool's errand that is no longer possible in what Jonathan Schell has called "the unconquerable world."

**Nine.** There is a global spiritual revolution underway the likes of which we've not seen before. People across the major faith traditions are organizing, talking, singing, chanting, and praying. There is power being unleashed and, despite differences, there is common ground around an agenda of peace, nonviolence, fairness, protection of communities, restoration of degraded places, ecological sustainability, an extended view of human rights as well as the rights of species and nature, and the rights of our children and those yet to live on Earth.

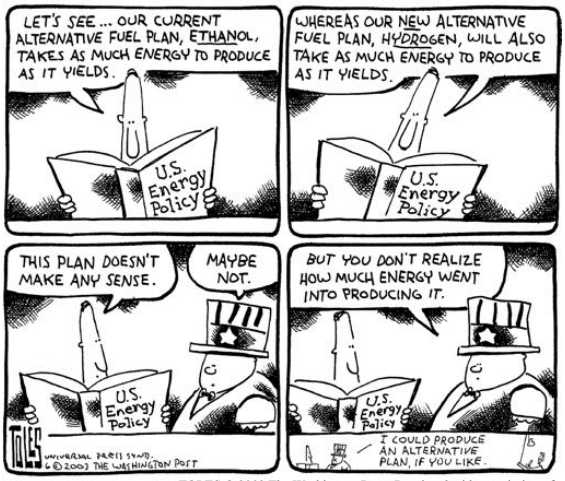
Said differently, it is not possible for long to organize our affairs around greed, illusion, and ill will. We are called to higher things. And in silence one can hear the birth pains of a new order of things—a new enlightenment.

**Ten.** We have reason to think that God is on our side. Why? God, who apparently has a sense of humor, reportedly recalled for a time Rush Limbaugh's hearing, a seldom-used faculty. And God will take back all unused faculties, among them humor, wisdom, creativity, foresight, and charity. These faculties are the ones we most need to take us to a different world—not utopia, but a far better world than that now in prospect. The race has never been just to the swift, nor the battle to the merely strong (Ecclesiastes, 9:11). The better angels of our nature will prevail, and that is solid ground for hope.

David W. Orr is professor of environmental science and politics at Oberlin College and author of *The Last Refuge,* 

# resources for a world beyond oil

**Michelle Burkhart**






## energy efficiency and renewables

**Alternative Fuels Data Center** offers resources about alternative fuels, locations of refueling stations, alternative fuel vehicles, federal and state financial incentives, and links to related resources. www.eere.energy.gov/cleancities/afdc

**Solar Energy International** sells how-to books and videos on renewable energy and natural home building. Also offers hands-on workshops and online courses in solar, wind, and natural building technologies. www.solarenergy.org

**American Wind Energy Association** provides resources for implementing small wind systems and allows you to search for wind projects by state. Offers the 2003 video *The Power of Wind,* a teacher's guide for wind energy, and other educational resources. www.awea.org

**Green Power Network** allows you to search by state for utilities that give customers the option of paying a "green price" to support utility company investment in renewable energy. Also describes how to purchase green power and provides a database to see if your state has this option. www.eere.energy.gov/greenpower

**The Veggie Van Organization** offers online resources to better understand biodiesel and *From the Fryer to the Fuel Tank: The Complete Guide to Using Vegetable Oil as an Alternative Fuel*. Their website also explains how to make tax-deductible donations of old diesel vehicles to become biodiesel demonstration vehicles, and they provide a link to learn about the FuelMeister, a personal biodiesel processor system. www.veggievan.org

**Alliance to Save Energy** offers information on how to maximize energy efficiency for consumers, educators, and policy makers in areas such as insulation, lighting, building, and financing energy efficiency. The programs they run include green campuses and schools, and state efficiency initiatives. www.ase.org

**Rocky Mountain Institute** shows how to create employment and protect natural resources through efficiency and renewables. Their website includes the Community Energy Opportunity Finder, an interactive tool that helps determine your community's best energy solutions. They also have a new book, *The New Business Climate,* which guides business owners and managers in improving energy efficiency and cutting operating costs. www.rmi.org

**Worldwatch Institute** recently published *Signposts 2004*, a CD-Rom, which tracks social and environmental trends, such as oil consumption. The CD contains charts, Powerpoint slides, a timeline of environmental milestones, and full text (searchable and hyperlinked) of recent *State of the World* and *Vital Signs* publications. Worldwatch's website also offers other resources related to climate change and energy, including an online guide called *Good Stuff? A Behind-the-Scenes Guide to the Things We Buy*. This guide includes tips, facts, and links to make informed choices about lighting, appliances, electricity, and other topics. www.worldwatch.org

**Student Environmental Action Coalition**, a youth-run national network, offers an action packet that guides students through running a clean energy campaign and provides resources on energy audits, green building, clean energy purchasing, and more. The website lists state coordinators who help network campaigns and advisors who will consult with students about energy projects. www.seac.org

***Carfree Cities*** by J.H. Crawford (International Books, 2000) argues that carfree cities would maximize quality of life for individuals and communities. He suggests ways to design modern cities for pedestrians and public transportation. www.carfree.com offers resources for car-free and sustainable development initiatives.

***The Natural Step for Communities: How Cities and Towns Can Change to Sustainable Practices*** by Sarah James and Torbjörn Lahti (Consortium, 2004) chronicles over 60 Swedish eco-municipalities, such as Övertorneå, whose government operations recently achieved 100 percent fossil-fuel-freenergy. Describes how these communities got sustainable and how others can replicate their success.

***Energy Revolution: Policies for a Sustainable Future*** by Howard Geller (Island Press, 2002) examines policy options for accelerating the transition to a more sustainable energy future. Provides examples of successful strategies that promote energy efficiency and renewables in various countries.

## climate change

***Stormy Weather: 101 Solutions to Global Climate Change*** by Guy Dauncey and Patrick Mazza (see articles by these authors on pages 18 and 42 respectively) (New Society Publishers, 2001) gives clear guidance on practical climate solutions and a wealth of resources for further reading and action.

**International Council for Local Environmental Initiatives**, through its global Cities for Climate Protection campaign, helps over 500 local governments reduce greenhouse gas emissions. ICLEI provides training, technical assistance, professional networks, and greenhouse gas emissions software to help local governments set and achieve emissions reductions targets. www.iclei.org

**Natural Resources Defense Council** devotes webpages to ending oil dependence—called *Break the Chain*—and global warming. The pages include letter-writing tips and information on clean cars and climate change. www.nrdc.org

**Solar Electric Light Fund** has a carbon neutral webpage to calculate your carbon dioxide emissions for the year or specific trips. Donations to offset your emissions support SELF's projects, which bring renewable energy to the developing world. www.self.org

**Climate Change Knowledge Network** connects worldwide activists, business leaders, scientists, and government leaders who research climate change. Their website provides an up-to-date overview of the key topics and actors in climate change as well as the status of climate negotiations. www.cckn.net

## the problem with oil

***The End of Oil*** by Paul Roberts (Houghton Mifflin, 2004) explores the possible results of peaking oil production, including severe price spikes, worldwide inflation, recession, and war. Discusses which energy sources will replace oil, who will control them, the transition to a world beyond petroleum, and the race for alternative energy sources.

***The Party's Over*** by Richard Heinberg (New Society Publishers, 2003) explores the transition into a new era, as cheap oil disappears and possible impacts of oil depletion. He predicts chaos unless a global program of resource conservation and sharing is initiated and recommends a "managed collapse" that would lead to a slower-paced, low-energy, and sustainable future.

***The New Great Game: Blood and Oil in Central Asia***, by Lutz Kleveman (Atlantic Monthly Press, 2003) examines the struggle between the United States, China, Russia, Iran, and multinational oil corporations for control over the energy-rich Caspian region.

***Hubbert's Peak: The Impending World Oil Shortage*** by Kenneth Deffeyes (Princeton University Press, 2001). Deffeyes, an oilman and geologist, states that based upon M. King Hubbert's observation that oil production follows a bell-shaped curve, world oil production will peak in this decade. Deffeyes says that the only long-term solutions lie in conservation measures and alternative energy sources.

**Oil Depletion Analysis Center** maintains an up-to-date information base to increase awareness of the world's oil depletion. www.odac-info.org

## transportation

**SpaceShare** web applications let conference or cultural event attendees connect with one another for carpooling, lodging, or car-rental. If event organizers sign up for the service, attendees can submit room and transportation preferences and SpaceShare sorts other people's posts to find a match. www.spaceshare.com

**Clean Car Campaign** provides guides and updates on greener vehicles. www.cleancarcampaign.org

**Car Sharing Network** explains the benefits of car sharing programs and how they work. Their website also lists car share projects by city. www.carsharing.net

***Transportation and Sustainable Campus Communities: Issues, Examples, and Solutions*** by Will Toor and Spense Havlick, (Island Press, 2004) examines ways to manage more sustainable transportation options in campus communities.

President Bush officially designated September 11th as Patriot Day. How should we mark this occasion? With conversations about the meaning of patriotism, say librarians

# September Is For Democracy

**by Michelle Burkhart**

"It should be the goal of libraries to have something in them that will offend everyone," says Nancy Pearl, librarian and creator of the "If All Seattle Read the Same Book" project. She believes libraries serve everyone across the ideological spectrum and hopes the same will be true of the September Project, a series of civic conversations to be held on September 11 this year and, organizers hope, every year, at libraries across the country.

Sarah Washburn and David Silver, co-directors of The September Project. Photo courtesy University of Washington/ Kathy Sauber

Founded by Sarah Washburn, a former employee of the Bill & Melinda Gates Foundation, and David Silver, a University of Washington professor, The September Project is a non-partisan effort to bring people together for public dialogue to find common ground and understanding. Silver says the September Project is rooted in an unwillingness to accept the public silence and personal isolation that he believes have covered the country in the shadow of 9/11 and exacerbated by factors such as the Patriot Act, media consolidation, and a lack of encouragement from both major parties' leaders for civic participation. Silver believes we need creative remedies such as the September Project. This year's themes will be democracy, citizenship, and patriotism,

Silver and Washburn feel libraries are the perfect hosts for the day, because they are the only safe, public, equal opportunity, and free space distributed across the nation. Pearl, who is serving on the September Project's national board of advisors, agrees. "I think the library is the last 'small-d' democratic institution in our nation," she says. "It's absolutely vital we keep it alive."

Participating libraries across the country will tailor events and programming to their community while reflecting on the three themes. Libraries in Minnesota and Ohio plan to hold events on the topic of America's role in the world. A group of libraries in Santa Cruz, California, is collaborating with non-profit, cultural, and civic organizations to develop events around the questions: What is great about America? What needs fixing in America? And what are we going to do to fix it?

The September Project is still taking shape. Plans are shaping to turn these local discussions into national and international dialogues. Events, such as performances and roundtables, may be webstreamed to all participating libraries. Building on Pearl's idea of getting everyone in a community to read the same book, Washburn and Silver suggest that everyone in the country read the Bill of Rights to foster a collective national consciousness.

Washburn and Silver also see the September Project as an opportunity to make September 11th a day of massive voter registration. "Maybe this can be the legacy of September 11th," Silver said.

For more information on the September Project and how to initiate it at your library, see www.theseptemberproject.org. Several libraries have decided to use *YES!* articles, discussion guides, and our book, *Making Peace: Healing a Violent World.* You can download *YES!* material at www.yesmagazine.org.

Linda Wolf

# One Easy Solution for Democracy

It's rare I see a simple solution to an agonizing public issue. So here's one I want to share. We are running up to a nail-biter of a national election (and lots of pivotal state and local races, too). Passions are running high. Among my friends, and maybe yours too, a topic that can spoil a picnic is third-party candidates.

No one gets the adrenaline flowing faster among progressives than Ralph Nader. Advocates love his take-no-prisoners articulation of the greed and duplicity so rampant among our corporate and government leaders. But others, many of whom once revered the corporate crusader, are now apoplectic about his potential to hand President Bush a second term and thereby lock in an extremist agenda that undermines our country on every front.

When you hear that groups like Citizens for a Sound Economy, headed by former House Republican leader Dick Armey, are working frantically to get Nader on ballots in key battleground states, you know something is amiss.

What's amiss is our electoral structure, which allows a candidate to win without a majority of the votes. But it doesn't have to be this way. There's a simple solution that doesn't take a constitutional amendment. This reform can be adopted by states—where innovation is a whole lot easier than at the national level. It's called IRV—Instant Runoff Voting.

Not sure what IRV is? Confused about just how it works? I've been confused, so I checked into it. Here's what I learned.

Under IRV, you don't just vote for one candidate. You rank your preferences among those running—first choice, second choice, etc. So let's apply this to an imaginary election to see how it works.

Suppose a state we'll call "Swing State" has just three candidates on the ballot—Bush, Kerry, and Nader. Its 5.5 million voters cast their votes as follows:

Bush: 2.6 million

Kerry: 2.5 million

Nader 0.4 million

Under our current rules, Bush wins, taking every one of Swing State's electoral college votes. But he didn't get a majority. Under Instant Runoff Voting, if no one won a majority of first-choice votes, Nader would be eliminated because he got the fewest votes. Now Nader voters' next choices are counted; let's assume 300,000 chose Kerry as their second choice, and 100,000 chose Bush.

Here are the results under IRV:

Kerry: 2.8 million (2.5 million first-choice votes plus 0.3 million who had first voted for Nader).

Bush: 2.7 million (2.6 million first-choice votes plus 0.1 million who had first voted for Nader).

Kerry now wins a true majority. It didn't take an expensive second election to determine the majority, and nearly half a million people got to voice their preferences for a third-party candidate without jeopardizing the chances of their second-favorite candidate.

Instead of feeding the acrimony about Nader being a "spoiler," why not push for a real solution? If Democrats want Greens and other independents to swallow hard and vote for Kerry, what will they give in return? Pushing for IRV is an obvious way to resolve the agony in the long term.

Ireland uses IRV to chose the president, London to elect the mayor, Australia to choose the House of Representatives. In November, San Franciscans will elect

their city officials using IRV. Many states and localities have legislation pending on some aspect of IRV (see www.fairvote.org).

IRV won't always favor Democrats. In the 1992 election, under IRV, Bush Sr. might have beaten Clinton if Perot voters had been able to vote their second choice.

IRV is not about helping a particular party. It's about creating a vibrant democracy—one with lots of voices, lots of debate, and lots of people turning out to vote their true preferences. It's about taking one more step on that long road to becoming an advanced democracy.

Thanks to all of you who wrote me about how you are using my "10 Ways to Change U.S. History" column (*YES!,* Summer 2004*).* Doctors put copies of it in their waiting rooms. College faculty handed it out in classrooms along with voter registration materials. People e-mailed it to friends; some posted it on websites. Even some Canadians plan to apply the "10 ways" to their own elections. I am thrilled with this evidence of people's renewed commitment to democracy. If you missed this column you can find it at www.yesmagazine.org.

Fran Korten
Executive Director

# events & announcements

### Green Festivals

September 18–19, Washington, DC, and November 6–7, San Francisco, CA. These events bring together green businesses and thousands of attendees. Positive Futures Network board members David Korten will speak in San Francisco. See www.greenfestivals.com.

### Sustainable Resources

September 30–October 2, Boulder, CO. Conference showcases solutions to poverty and sustainable development. For details, visit www.sustainableresources.org.

### The Challenge of Globalization

October 14-17, San Francisco, CA. What will it take to globalize peace, justice, and human rights? Visit www.peacejusticestudies.org or call 415/422-5238.

### Northwest Social Forum

October 14–17, Seattle, WA. Modeled on the World Social Forums, the NWSF will bring together activists, organizations, and community groups working on solutions to social, economic, and environmental challenges. For details, go to www.nwsocialforum.org.

### International Forum on Globalization

October 14, 7 p.m. Town Hall, Seattle, WA. "Five Years After the Battle of Seattle," with Walden Bello, Danny Glover, Maude Barlow, David Korten, Lori Wallach, Martin Kohr, John Cavanagh and others. Sponsored by the IFG and the Northwest Social Forum. See www.nwsocialforum.org.

### Bioneers

October 15–17, San Rafael, CA. This year's speakers include Martha Arguello, Amy Goodman, Paul Hawkens, John Mohawk, Michael Lerner, Amory Lovins, Wanjira Mathai, and Terry Tempast Williams. Pre- and post-conference sessions on ecological medicine, undoing racism, leadership, and fundraising. See www.bioneers.org.

### Positively M.A.D.

November 6, San Francisco. Berrett-Koehler authors, including PFN board members David Korten, Gifford Pinchot, and Jill Bamburg, speak on making a difference. Co-sponsored by *YES!* See www.bkconnection.com.

### The Gift Economy

November 13–14, Las Vegas, NV. An international conference on the role of equal exchange of labor and services in a healthy economy. Speakers include women writers and thinkers, including Vandana Shiva. For details, go to http://gifteconomyconference.com.

### Gregory Bateson at 100

November 20, Berkeley, CA. Conference will explore the significance of Gregory Bateson's life and work for the new century. Co-sponsored by *YES!*. For details, go to www.batesonconference.org.

### Safe Fish Guides

Physicians for Social Responsibility and the Association of Reproductive Health Professionals have released *Fish Consumption to Promote Good Health and Minimize Contaminants* and *Healthy Fish, Healthy Families,* for doctors and consumers, respectively. Both guides are available at www.mercuryaction.org/fish.

### Talk to US

This new project gathers personal video messages from ordinary people around the world speaking directly to Americans. Find out more at www.talktoUS.org.

# Broadening Our Reach

## Teachers Explore Water

The *YES!* Education Program brought together a coalition of four educational organizations in Seattle to offer a teacher-training workshop inspired by our winter 2004 issue, "Whose Water?" Dr. Rick Lorenz, an expert on water issues of the Middle East, spoke to 44 teachers at the summit entitled *Building Bridges over Troubled Water.* Teachers received curriculum materials and lesson plans. A panel of local experts offered students water-related service-learning opportunities.

The coalition plans to offer another teacher summit in early 2005 based on a different *YES!* issue. Visit www.yesmagazine.org for updates.

—Kim Corrigan

## Earth Day Award

*YES!* was honored to be nominated for Utne's 2003 Independent Press Award for Political Coverage last year. This year, we were recognized locally with the Kitsap County 2004 Earth Day Award for "Outstanding Achievement in Sustainability."

Here are some ways we minimize our impact on the environment:

- *YES!* is printed on 100 percent post-consumer waste, chlorine-free paper, using soy-based ink—a rarity in the magazine industry
- We buy second-hand computers and recycled office supplies
- We invest in a green fund retirement program
- We re-use and recycle our in-office paper
- We maintain an office worm bin to compost lunch scraps.

—Susan Gleason

## New Face at PFN

Ezra Basom has joined us as Development Coordinator, picking up from Donna Trost, who returned to being a full-time mom. Ezra grew up with magazines all over the house—his mother founded Small Changes, which distributes many magazines, including *YES!,* to retail stores. He's managed political campaigns and community festivals and brings a wry sense of humor, talent at managing databases, and creative ideas for connecting more fully with our readers and supporters.

—Fran Korten

## On the Road

2004 has been a bonanza year for solution-oriented conferences on everything from democracy and local currencies to environmental sustainability. PFN board chair David Korten gave a keynote speech at the Menominee Nation Sustainable Development Institute; David and Sarah van Gelder gave presentations at the Praxis Peace Institute conference. David and Alisa Gravitz (Co-op America executive director and PFN board member) will speak at Co-op America's Green Business Conference, "Growing the Green Business Movement," November 3–5 in San Francisco. To sign up for occasional news and announcements from *YES!*, visit www.yesmagazine.org.

—S.G.

## New Website, Speakers Bureau

Our website, www.yesmagazine.org is boasting a new look and improved online services for our readers. You'll find a searchable archive of past articles, announcements of events, news and people of Positive Futures Network, resource lists, discussion guides, and speeches by David Korten.

You'll also find an easy way to give gift subscriptions, renew your subscription, or buy books and back issues of *YES!*

While you're on line, check out the new *YES!* Speakers Bureau, featuring over 70 activists and thinkers on a wide range of issues.

—S.G.

## Applause to Volunteers and Interns

Thanks to the crew that helped us move more than 800 pages from our old website to the new site. Interns Michelle Burkhart, Darrin Burgess, Ryan Richards, and Brian Edstrom, and volunteers Cathy Nickum and Sean Roach all assisted us with this monumental task.

—Audrey Watson

sustainableliving

Searching for simple and practical ways to live sustainably? Want to be part of the solution? Looking to create a safer world for yourself and your family?

# Yes! But How?

## Broken Office Equipment

**We would like to recycle locally our broken copy machine and shredder. We also have several old computer monitors and printers that we would like to give away. Could you help us?**

The Electronic Industries Alliance (EIA), which launched a Consumer Education Initiative in 2001, can help you. Their website, www.eiae.org, lists re-use and recycling programs by state, city, and county. The database lists hours of operation, contact information, what electronics they accept, and fee information for each program.

Also, Office Depot is partnering with Hewlett Packard to provide a free, nationwide electronics recycling program. You can drop off electronics at any Office Depot through September 6, 2004. For details, see www.officedepot.com/recycle.

If you decide to recycle your electronics, ask the following questions:

Will they reclaim all the pieces, only the most valuable pieces, or simply extract toxics and put the rest in a landfill? The more they can reclaim, the better.

How and where will the equipment be processed? It is best if the equipment is processed domestically because environmental regulations are likely to be more stringent than overseas. If they send it overseas, are there environmental regulations where they will send it?

Can you see documentation about the receiving facility that handles the materials and proof that the materials were sent to the facility and handled in an environmentally sound manner?

If you don't feel comfortable with their answers, find another recycler.

**—Michelle Burkhart**

## Microwave Ovens

**I've always thought microwave ovens are energy-hungry and emit dangerous radiation, but now I hear that they are actually more sustainable than conventional ovens. Is this true?**

According to Louis A. Bloomfield, professor of physics at the University of Virginia, cooking with microwave ovens is neither energy-hungry nor dangerous. In fact, compared to conventional ovens, microwave ovens are about five times more energy efficient, transferring 50 percent of their energy into food compared to the 10 percent energy transfer of conventional ovens.

Microwave particles are a type of radiation, but unlike ultraviolet rays or X-rays, microwaves do not affect cell structure. They simply stimulate water and fat molecules, which generate thermal heat.

You should be concerned about what you microwave food in. Specifically, do not microwave your food in plastic. Studies have shown that when any plastic container is microwaved—even one labeled "microwave safe"—it can leach dioxins, carcinogenic chemicals that the EPA considers a serious health hazard. Plastic wrap is especially harmful, leaching at least two carcinogenic chemicals into food including nonylphenol, which imitates estrogen in the body and is linked to breast cancer in women and low sperm counts in men.

Microwave your food in tempered glass, Corning Ware, or ceramic, and remember to remove items from TV-dinner trays and instant-soup containers.

**—Darrin Burgess**

## Smoke Alarms

**After reading that household smoke alarms contain radioactive material, I examined one of mine and sure enough, it had a radioactive warning symbol. Are all smoke detectors radioactive? How do I dispose of one? Do effective alternatives exist?**

There are two kinds of household smoke alarms. The kind you've mentioned is called an ionization detector, which is cheap to manufacture and therefore very common. It is especially sensitive to transparent smoke created by open flames.

An ionization detector houses a tiny amount of americium-241, a radioactive element which is situated between two metal plates wired to a 9-volt battery. Am-241 releases a steady stream of alpha particles that

'ionize' the air by knocking negative electrons off positive oxygen and nitrogen atoms. Electrons flow to one plate and atoms go to the other. When smoke particles enter the chamber, they interrupt this flow and trigger alarm.

The amount of radiation these detectors emit is infinitesimal. In fact, *Consumer Reports* researchers found that even up close, an ionization detector emits no more alpha radiation than what is naturally produced by the earth. Furthermore, alpha particles are blocked by a few inches of air and they can't even penetrate tissue paper.

Yet they can cause cancer if inhaled or ingested. So don't tamper with the aluminum cap that houses the americium. If it is made airborne the consequences could be lethal.

This makes disposal tricky. Radiation can be released anytime a detector is crushed in a garbage truck or city disposal, incinerated by the city or even destroyed in a household fire. Fortunately, the EPA says your state may have a radiation control program that will accept these detectors. Otherwise, you should return it to the supplier, listed in the user's manual.

The alternative to an ionization detector is a photoelectric detector. When smoke particles enter this device, they scatter the light particles of a small beam, which hit a sensor and sound the alarm. Photoelectrics are better at detecting smoldering fires—by far the most common household fire and leading cause of fire-related fatalities.

**—Darrin Burgess**

## Investing

**I thought I was investing in a socially responsible fund, but I found out they support military contractors. How can I know if I am investing in a fund that supports my values?**

What is socially responsible for one person may not be for another. For example, one mutual fund may screen out companies that support abortion and contraceptives because they screen based on Catholic values and another may include such companies to limit unwanted births and control population. This means that to ensure a fund matches your values, you need to scrutinize how they screen companies and how they approach investments.

Socially responsible investing (SRI) consists of four approaches: positive screening (investing in companies that align with your values), avoidance screening (diverting investments from companies that act contrary to your values), community investing (investing in community-based institutions), and shareholder activism (working from inside companies to influence practices and policies). The Social Investment Forum (SIF), a program of Co-op America, has a website (www.socialinvest.org) that has a wealth of information about SRI and allows you to review "socially-responsible" mutual funds. The site lists the funds' performance data, how they screen, profiles, and links to the funds' websites.

Begin with reviewing SIF's mutual fund chart that shows how each fund screens areas such as tobacco, defense/weapons, environment, human rights, labor relations, and community investment. If you are interested in a particular fund, check out their profile and if still interested, visit the fund's website. This is where you can research the fund's holdings, the percentage of each holding in the fund, and how much the fund invests in community-based institutions and participates in shareholder advocacy. When you find a fund that looks like it matches your values, ask for and study a copy of their prospectus. This will give you full disclosure of everything you need to know before you invest in the fund, including the fund's objectives and details of their screening.

If you would like help finding a mutual fund, consider hiring a financial planner knowledgeable in SRI. SIF has a database of financial planners in their network that you can access by clicking on "Find Help" in the "Investors" section of their homepage. You may also find this route helpful if you cannot find a mutual fund that matches your values and you decide to build your own portfolio.

You can also reach SIF by phone: 202/872-5319.

**—Michelle Burkhart**

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**Saying Yes!: Conversations on a World that Works for All** David Korten, Joanna Macy, Juliet Schor, Paul Hawken, Vicki Robin, Carl Anthony, Muhammad Yunus, and others.

**Making Peace: Healing a Violent World** Is peace possible? A prison inmate, a theologian, a global activist, a spiritual leader, a Kentucky farmer, a diplomat—all answer "Yes!"

**We the People: Conversations on Being American** Narrated by Danny Glover, a diverse cross-section of Americans shares experiences of life and activism in the U.S.—and comes to some surprising conclusions. (This 28-minute video comes with a discussion guide & *YES!* #21.)

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