Survival and Thrival

Useful Ideas for the Human Race

Coralie Koonce

All-Species Day   Analogical Thinking   Appropriate Technology   A.R.T.
Banks without Usury   Bike-and-Ride   Bill of Rights for Future Generations
Bioregions   Biospheric Equity   Brainstorming   Buddhist Economics
Carbon Tax   Car-Free Cities   Chipko   Citizen's Assembly   City Trails
Civility   Clean Energy Victory Bonds   Cogeneration   Community Land Trust
Complementary Currency   Concentrating Solar Power   Conflict Resolution
Consensus Democracy   Cool Cities   Cooperatives   Credit Unions
Cradle to Cradle   Criminalize Nuclear Weapons   Critical Thinking
Decentralize   Deep Ecology   De-growth   Deliberative Polling
Desertec   Devolution   District Heating   Divergent Thinking
Each One Teach One   Eco-Cement   Eco-literacy   Ecological Economics
Ecological Taboos   Eco-villages   Elders   Energy Conservation
Energy Star   Enough   EVs   The Evolution of Perception
Fair & Balanced Media   Fair Trade   FreeCycle   Full-Cost Accounting
Full-Spectrum Light   Generativity   Geothermal Power   Gift Economy
Global Basic Income   Global Village Construction Set   Golden Rule
GreenBelt Movement   Gross National Happiness   Guerrilla Gardeners
High Speed/Light Rail   Human Mic   Human Scale   Imperial Liquidation
Indigenous Knowledge   Indignados   Initiative   Intellectual Infrastructure
Know Thyself   Land Reform   Land Trust   LEED   Less Is More
LETS   Little Houses   Local Currencies   Microloans   Microgeneration
Mondragon   Natural Learning   Neighborhood Self-Reliance   Net Neutrality
New Urbanism   Nonviolent Revolution   No Political TV Ads   Nuclear Freeze
Occupy   Offshore Wind   Open Space Events   Pachamama   Parkour
Participatory Democracy   Pay It Forward   Peace Churches   Pedicabs
People's Assembly   Permaculture   Personal Carbon Trading   Planet Craft
Pleistocene Park   Precautionary Principle   Prime Directive   Probability
Product Service Systems   Prohibit Weapons in Space   Radical Transparency
Reasonableness   Recall   Recycling   Redefine Morality   Referendum
Re-skilling   Remanufacturing   Restorative Justice   Rites of Passage   R2P
Sense of Place   Seventh Generation   Slow Food   Small is Beautiful
Solar Architecture   Solar Photovoltaics   Sustainable Development
TEQs   TV Turnoff Week   Tidal Power   Time Bank   Tobin Tax
Traditional Diets   Transition Towns   Transportation Network
Treaty Bans Weapons in Space   Unplugged Schools   Universal Disarmament
Urban Agriculture   U.S. Dept. of Peace   Vegetarianism   Vertical Gardens
Voluntary Simplicity   Walking School Bus   War Tax   Wave Power
Well Baby Movement   Wind Power   Workers Cooperatives   Xeriscape
Year of Jubilee   Youtopia Game   Zero Waste   Zoopolis   ZPE

Contents

Book One: Models and New Directions

Book Two: Meeting the Big Challenges

Part One: Two Existential Threats

Part Two: Making a Living, Having a Say

Part Three: What Hath Man Wrought?   352

Part Four: Healing People

Part Five: Transformation

Book One: Models and New Directions

Introduction

We shall require a substantially new manner of thinking if mankind is to survive.
Albert Einstein, physicist, 1879-1955

As a human being, I want my kind of creature to survive. Maybe this is egoism writ large, or maybe this desire is hard-wired in me by evolution. In any case, there it is. Beyond this desire for human survival, I wish for future people to thrive, to be happy, to self-actualize, to evolve spiritually, and to live in balance with the rest of Nature. Doesn't everyone wish these things for our descendants (not to mention ourselves?)

Nevertheless, many of us sense that as a species we've gone off the track and are failing to move towards the end that we all desire: a healthy and ever more human humanity. We keep going back to the same answers: more trade, more technology, more education, and more elections—basically, more Western Civilization. Yet somehow it isn't enough—or maybe it's too much. At any rate, it isn't working very well. Every bit of 'progress' has a cost.

We know humanity could be a lot better, we feel it in our bones. However, the positive changes need our help. A "new manner of thinking" requires us to midwife a more conscious evolution, regenerating ourselves and our social structures.

Let's call this book a guide for species bootstrapping. We're preparing for a long expedition, packing up the world-view maps, problem-solving methods, creative ideas, and dreams. Sometimes we see warnings of obstacles and false solutions. Do not expect this guide to provide a political platform for the needed transformation. It is not an ideology but a beginning look at ways to help the human race continue happily and sustainably into the indefinite future, to stimulate your own thinking and discussion.

Book One considers guidelines, models, visions, and strategies: a preparation of the ground for your own thoughts about change. It also focuses on the local level.

Book Two goes more deeply into intractable problems such as war, climate change, and global poverty, proposing solutions that are new, divergent, or at least off the public radar.

Since publication of the original version of this book in 2010, the world has seen several big, unforeseen changes, the kind that futurists call 'wild cards': The BP oil spill, WikiLeaks, the Arab Spring, Japan's tsunami and nuclear disaster, austerity and anti-union policies in Europe and the U.S., Occupy Wall Street and other economic and political protests—and ever more urgent warnings about climate change. This new context called for a revised version.

While the survival of humanity—our own species—must be close to everyone's heart, it is not currently at the top of the world agenda. Most attention is directed to the problems at hand. Here in the U.S., Americans are deeply immersed in their more local predicament, namely, that virtually all major U.S. systems appear to be breaking down, from health care and education to politics and the economy. These systems manage to perpetuate themselves but do not perform the functions for which they were originally designed. For instance, the political system is quite corrupted by corporate money and has deteriorated into two warring factions. The economy is

working for Wall Street but not for Main Street. We spend a lot on medical care and education but without the best outcomes (compared to many other countries). And so on.

These important struggles in our country have effects on the rest of the world, but they are only part of what faces the seven billion humans who live on Earth. We Americans need constant reminders that it isn't all about us.

This many people live in the USA:　　　*
This many live in the rest of the world:　* * * * * * * * * * * * * * * * * *

As we in the rich countries, surrounded by our gadgets, look out from our privileged position, humanity looks very successful. But after digging deeper and looking ahead we could tag ourselves endangered like the polar bears, cheetahs, frogs, and mountain gorillas. Uniquely, in our case we are self-endangered. Humans will sink or swim together, and we need to devise ways to keep everyone afloat. The prime directive of other species is to perpetuate their species. As a biological species, that must be our prime directive too—or else we will go the way of the dodos and passenger pigeons. We are unique in that members of our species can consciously consider what we do next. That doesn't mean we *are* making conscious decisions most of the time, as individuals or groups. Humans are only potentially rational beings.

The first two books in the series *Thinking Toward Survival* aim to convince you—if you are not already convinced—that the human race faces an array of incredible challenges, including but not limited to climate change, and then to point out the ways in which current thinking falls far short of meeting those challenges. The previous books were, respectively, about ancient habits of thought that limit us and about common ideologies that also narrow our thinking. They contained some positive suggestions, but this third book is meant to be focused on positive ideas and ways of working together that can not only sustain us but also help us live more satisfying lives. Many such plans are already in the works, needing only wider dissemination. Others are new creative responses arising by the day from members of our curious and adaptive species.

What Would New Thinking Look Like? First, it is the habit of *thinking as a species*, instead of primarily as members of nation-states or other sub-groups. We are of one biological species, with a long past and a future of indefinite length—we are not simply some 300 million inhabitants of a particular land mass called the United States (or inhabitants of whatever nation). Also let us strongly resist the divisions of gender, age, ethnicity, religion, or political orientation.

New thinking would be a *tempered optimism*. Knowing that our kind is endangered need not involve despair. Our species has shown itself uniquely capable of change. We could calmly face our existential situation together, with courage and all the mental tools at our command. Instead of a few quick-fix answers, we would search for new directions on roads less traveled by.

Sometimes we get so bogged down in the problems that we miss seeing the constructive suggestions in front of us. These may be visions, new paths, existing models and examples, or helpful strategies that we could be taking. To keep readers alert to the fact that we are talking about *positive actions and ideas*, I mark some of these with a triple plus sign like this +++

What Are the Obstacles to New Thinking? We evolved to face visible threats with immediate negative consequences. If everybody can see the house is on fire there's no argument about doing whatever it takes to save ourselves and kin. However, if danger threatens the whole species, which is to say each and every human in the world—yet people can't actually see and

smell the threat; if it seems too abstract or a few years into the future; if it is cumulative; or if some people dispute its very existence—then it is much harder to get everybody to act.

The United States public, well-intentioned and rapidly self-educating, is bombarded by propaganda and PR. Some, locked into old ways of thinking, fear a Mad Max scenario: economic upheaval and marauding hordes of city-dwellers, with survival only about one family, their freeze-dried food, and a trusty shotgun with plenty of ammunition. Some are so caught up in political rivalries that they assume species survival issues are simply partisan propaganda. Others, paralyzed by their knowledge, fear that humanity is already doomed by what we have collectively set in motion such as climate change and expanding populations. Yet their pessimism may be based on outdated knowledge and obsolete ideologies.

Yet change has certainly begun. Some precipitating factors are the viral spread of information on the Internet and political organizing via social networks. In 2011, people from Arab countries to Ivory Coast and Israel, from Madrid to Wall Street to Russia reached their boiling point and began vigorous protests against authoritarian regimes, corporate domination, and corrupted governments. The outcomes so far are varied, but this wave is certainly not over.

Meanwhile, the Internet makes possible a lot of self-education and debate about humanity's issues. This potential has barely been tapped. The process of rescuing our kind has begun, but it is still in its early stages. What would it take to bring more people into the realization? And are we looking at our self-endangerment as broadly and deeply as we need to?

Five Threats: Concurrent dangers to our survival as the human species can be seen as five specific threats. One trouble concerns population growth at living standards that overwhelm Earth's carrying capacity, a dual problem of *overpopulation* and *overconsumption*. This overshoot contributes to world poverty, the growing scarcity of freshwater for human needs, the likelihood of wars over scarce resources, and increasing pollution and greenhouse gas emissions.

A second peril is our headlong rush into *dangerous technologies* without considering the consequences. Some of these technologies threaten our reproductive capacity, our lives, and the planetary systems that sustain us.

A third crisis is *ecosystem failure*, notably climate change, but also increasingly unhealthy oceans, eroding topsoil, and the loss of other species which depend on each other in ecosystems, and we on them.

The last two dangers are related. The persistent *habit of war,* with its constant innovations and stockpiling of ever more destructive weapons, is now thousands of years old. Besides the existential threat of proliferating nuclear weapons, and the actual destruction of smaller, conventional wars, today's military production and preparation takes up a large fraction of the planet's resources, contributing greatly to world poverty.

The fifth danger arises because peak oil and gas (and declining reserves of other vital resources) coincide with geostrategic thinking by elites and by nationalism as a consensus ideology in virtually every country. This combination of *depletion +geostrategy + nationalism* makes devastating wars much more likely. It could even lead to an international free-for-all that destroys most of us merely to maintain a lifestyle for some of us that is already obsolete because it causes ecosystem failures.

All five dangers are, to some degree, entangled with the world's current dominant economic-political systems, corporate power, and neoliberal ideology.

We (collectively) are not confronting these dangers with complete attention. The human race has yet to fully develop our potential for foresight. History records much more about leaders

jockeying for power than about their problem-solving. In an age of mass media, ideologies tend to replace thinking, often to promote or rationalize agendas of sub-groups. Yet all of this drag can be overcome. Humans do have the tools to save ourselves; however, it won't be easy, and we should start immediately.

We need to evolve ASAP!

Chapter 1
Open the Window

"We were making a future," he said, "and hardly any of us troubled to think what future we were making. And here it is!"
~H.G. Wells, *The Sleeper Awakes*, 1910

We continue to make the future every day with everything we do. Every time we buy something we are voting. Every time we make a decision the future bifurcates into the road taken and the road not taken (parallel worlds, if you will). Meeting the challenge of our moment in time, there are still enough perspectives, ideas, insights, actions, groups, and strong-willed, idealistic individuals out there to give us hope. We will need all our resources of heart, mind, and will, our accumulated knowledge and spiritual wisdom, to survive and keep the planet whole.

Human institutions were devised by humans, to serve human needs. If they no longer serve them, or if they have come to serve only a few humans and not the species as a whole, then they need to be changed—and we can change them. We were not born to be cogs in a wheel. We were not born in order to serve our nation-state or die for it**.** We were not born to believe and spread a certain ideology. Since human institutions and systems of ideas were developed by humans, none of them is sacrosanct. I do not suggest that we throw them out willy-nilly—only to caution against mistaking the current time and place and today's consensus reality for the apex of human development and supreme arbiter of the human spirit.

Most people, regardless of whether they call themselves conservative or liberal or something else, can probably agree on aims such as these: a world of healthy children growing up safe from malnutrition, pollution, and war; a big middle class, not a pyramid with a few wealthy on top and a huge base of poor people; universal peace; democratic governments everywhere; a planet with sustainable energy and sustainable forests, agriculture, and waters; in other words, a planet that can support our grand-children and their grand-children in a truly human life.

We could work together on these aims instead of constantly taking adversarial positions. We can transform our thinking, learning to resist distraction, manipulation, subtle intimidation, misinformation, and disinformation. It is possible to overcome ancient mental programs that blame, scapegoat, and demonize other people. With awareness, people can resist the forces that would divide us by religion, ethnicity, age, gender, social class, and the artificial boundaries of nation-states. They can break out of ideological boxes and closed systems of either/or. l

The mantra is "Think Globally, Act Locally." In order to gain the larger, planetary context for decision-making, economist Hazel Henderson suggests we practice thinking like a movie camera: sometimes panoramas, sometimes close-ups. Then we could easily go from personal and local, to national, international, and global and back again. Everybody possesses such a mental tool-kit with both its zoom lens and a wide shot. Let's practice using it. +++

We can include occasional flashbacks (i.e., history) in order to explain current actions.

Acting Together

> *To begin to free ourselves, the first thing we need to do is to see ourselves again as historical actors, as people who can make a difference in the course of human events.*
> ~David Graeber, *Debt: the First 5000 Years,* 2011

We urgently need to work together across national boundaries. A number of highly effective nongovernmental organizations (NGOs) already do this, such as Doctors without Borders, Bread for the World, and Amnesty International. Large numbers of people need to participate, not just give money. The World Wildlife Fund, largest multinational conservation organization, has almost five million members and works in 100 countries. Friends of the Earth (F.O.E.) is counted the world's largest grassroots environmental network, with two million members and about 5,000 local activist groups spread across all continents. Greenpeace International at 2.8 million members is now stronger in Europe than in the United States and growing in Latin America and Asia. Greenpeace is committed to non-violence against either property or persons, using the tactic of "creative confrontation." Among its successes so far, Greenpeace counts the ending of atmospheric testing of nuclear weapons and the treaty declaring Antarctica to be a global park.

Many other NGOs are working their own wonders through education, lobbying, legal action, and prototype projects. The world needs even closer alliances among all the green and sustainability groups across the globe, working with organizations devoted to peace, justice, and poverty issues. This may now be happening around the climate crisis. For instance, a coalition demonstrating for climate change action ahead of the Copenhagen conference included not only environmental groups such as Greenpeace, Friends of the Earth, and WWF, but also Oxfam.

Avaaz.org is an independent, not-for-profit organization that conducts online global campaigns for various environmental and humanitarian causes. Adbusters, an anti-consumerist environmental organization has launched several international campaigns such as Buy Nothing Day, TV Turnoff Week, and Occupy Wall Street (OWS).

A friend, Dennis Larson, has proposed a global alliance of parents to pressure all governments to stop arming themselves and to stop supporting dangerous technologies that threaten the next generation. Who but parents are closer to the heart of humanity's survival?

Several very large planetary demonstrations occurred in the 2000s. In February 2003, some ten to fifteen million people in 800 cities and 60 countries demonstrated against the impending invasion of Iraq by the United States. In Rome alone, three million people took to the streets to create the largest anti-war rally in history. Then, on October 24, 2009, on a day of climate change awareness, there were 5,200 separate actions in 181 countries: parades, rallies, and creative theater. Another such event, Climate Impacts Day, is planned for May 5, 2012, with global witness at sites where climate change is already affecting local people.

During the Copenhagen summit in December 2009, 14 million people signed a petition asking the world's leaders to present us with a strong and effective agreement (which, unfortunately they did not do). Apparently 15 million people taking to the streets or signing a petition do not quite constitute critical mass. Then what number would? Let people who want the human race to survive and live in peace on a habitable planet join together in a green alliance, an alliance of parents, a human species alliance, and become a force to be reckoned with. Don't forget that the second superpower is world public opinion. Why not make it the first?

Perhaps it is not so much size that counts as passion and dedication (and often desperation). Like being chased by a bear, global economic crisis focused people's attention. It became crystal clear that something needs restructuring or replacing. Besides high unemployment rates, modern capitalism is deeply linked with unsustainable overconsumption, ecosystem failures, dangerous technologies, and war. True economic alternatives are barely on the public horizon. The world-wide economic crisis that spread from the United States in 2008 kindled a number of protest movements such as the 2009 Kitchenware Revolution in Iceland that forced out a right-wing government and began a process by which ordinary citizens not affiliated with particular political parties wrote a new Constitution of Iceland. The Icelandic parliament is the oldest in the world—Althing was founded in 930—giving Icelanders some experience of democratic representation.

Widespread youth unemployment was the final straw in many countries which do not enjoy democracy. In December 2010 the Arab Spring or Arab Awakening began in Tunisia and spread to at least 12 countries in the Middle East and North Africa (MENA), a region of authoritarian, corrupt leaders who had held power for decades. By February 2012 three governments—Tunisia, Egypt, and Libya—had been overthrown. Violent repression by the government turned nonviolent protests into civil wars in Libya and Syria. Protestors used strikes, demonstrations, marches, and rallies, with the new social media to organize and communicate.

The courage and commitment of people in so many MENA countries inspired others across the world to nonviolent protests against both governments and corporate domination. Unfortunately, in many of the MENA countries the protests and revolutions were aborted or coopted by new authoritarians.

In fall 2011 Occupy Wall Street began in the United States and quickly spread to several other countries. This movement puts economic realities front and center. Major issues in the United States are higher taxes on the "one percent," ending corporate influence on elections, closing corporate tax loopholes, student debt forgiveness, a more regulated financial services industry, and a direct, well-funded effort to put people back to work.

OWS was itself inspired by the Arab Spring and European protests such as those of the Spanish Indignados. It is not yet known how radically OWS might restructure a dysfunctional political system and economic system in the United States, or whether the continuous feedback loop of protests might spark a world-wide movement of economic and political change.

Everybody in the Pool

Nobody made a grater mistake than he who did nothing because he could only do a little.
~ Edmund Burke, Irish statesman and political thinker, 1729-1797

Individuals in all kinds of circumstances and in countless ways are working towards the survival not only of themselves and their kin but of everybody. If you find these people, you can imitate their memes. If you are these people, keep it up. This is not a job for Superman—this is a job for all of us. Such work is not pure altruism, since you are part of the planet and will live or die with it. Comedienne Whoopi Goldberg once noted that "If every American donated five hours a week, it would equal the labor of 20 million full-time workers." Do you suppose every adult and adolescent could donate at least one or two hours a week to humanity's survival?

One individual, one witness or whistleblower or activist can have an amazing effect. In 1973 an accident sent a toxic chemical fire retardant into the Michigan food chain, but three years later the incident was largely forgotten even in Michigan. Then an article in *Audubon* magazine

revealed for the first time "the full details on how the PBB accident occurred, how it was ignored or covered up by state farm and health authorities, and how the cause of the mysterious calamity was discovered because of *the persistence of one farmer* [my emphasis]."

Grassroots activists have made huge differences. Lois Gibbs, a young mother in 1978, found her voice at Love Canal and went on to organize the Center for Health, Environment and Justice, which now has 14 full-time staff members. In Jacksonville, Florida, Mrs. Lee Adams turned the tide against air pollution in the 1970s. During the same period Vera Mize, housewife and secretary, made it her cause to save Lake Superior from environmental degradation. About thirty years ago, a double nuclear reactor was planned for a location less than 100 miles west and upwind of my town. Carrie Dickerson, a middle-aged nurse who lived near the site, dedicated herself and her resources to organizing resistance to these reactors, pursuing both legal action and protest demonstrations. The Black Fox project was finally scratched.

Maria Gunnoe, lifelong resident of Appalachia, struggled for years against mountaintop removal mining and valley fill operations. She created neighborhood groups to monitor coal companies, organized nonviolent protests, and testified in court despite death threats—the only resident to testify in face of such intimidation. The court ruled in her favor, repealing permits previously granted by the Army Corps of Engineers to a mining company for constructing new valley fills.

Since 1989, the Goldman Environmental Prize has been awarded to 133 people from 75 countries, all grassroots leaders who have fought against logging development, toxic dumping, indifference to tribal rights, and other threats. For instance in Gabon, a country in West Africa, Marc Ona is president and founder of an environmental NGO called Brainforest to protect Ivindo National Park and its western lowland gorillas, forest elephants, and other rare forest wildlife along with two of the world's most beautiful waterfalls, Kongou and Mingouli Falls. Ona leads efforts to expose the illegal and secretive agreements between his government and a Chinese mining company that plans a huge $3.5 billion development to include a mine, a dam, railroads and a port. Ona, who uses a wheelchair, faces arrest and imprisonment for his campaign, but due to his efforts, the Gabon government is reevaluating the Berlinga project.

It is not always necessary, or possible, to dedicate one's self so intensely to a particular cause, but I am grateful that some of us do. Just don't count on a few to do it all. In the Saints-and-Martyrs Syndrome we not only admire people but unconsciously *expect* them to shoulder the full load as surrogates for the rest of us. Instead, as Dr. Helen Caldicott, pediatrician and anti-nuclear activist, says "Each of us must accept total responsibility for the earth's survival."

In chaos theory, the Butterfly Effect is "a sensitive dependence on initial conditions." The common example is the flutter of an insect's wings starting air movements that eventually result in a storm halfway across the world. In other words, a small cause at the beginning can spin out into some very large effects. This suggests that one person who starts a positive new action may have a larger than expected effect. One reason I like alternate history fiction so much is that by showing how a small change in past history might have resulted in a very different present, it suggests that small positive changes in the present might result in a very different future.

Find a Fulcrum for the Lever

All things are possible until they are proved impossible—even the impossible may only be so, as of now.
~Pearl Buck, author of *The Good Earth,* 1936

Some of our difficulties are concentrated at the local level, others are bioregional, and some touch several nations or all of them. The location or distribution of the problem determines at what scale we can work on it, from family to globe. Government solutions are often heavy-handed quick-fixes that involve bureaucracies, one-size-fits-all thinking, and waste. On the other hand, many problems exist that individuals cannot reasonably be expected to solve on their own because the scale is too large and expensive, or the solution requires special expertise. Individual decisions that impinge on the rights of other people must be arbitrated or subject to laws.

One common pitfall is to put the entire responsibility on the individual. Take for instance water conservation. You can find many good tips and specific devices for the residential user to save water. For instance, you can convert an old-fashioned toilet to dual flush with a $25 device. However, the thermoelectric industry uses almost half of the water withdrawn in the United States (48%) and irrigation requires another one-third of the total. Most irrigators are agribusinesses which do not use state-of-the-art irrigation methods that conserve water. While it would be naïve to expect that personal actions alone will protect water sources, it is still a good idea to conserve water at the household level, for at least three reasons. First, this does help contribute to the solution. Second, the habit of conserving water will save money for your household. Third, it demonstrates your personal commitment to other people who may copy your memes while also pursuing collective actions to stop the exhaustion of water sources by electricity generation and agribusiness. Political and personal action is not an either/or. +++

Each person has to keep the goal in sight and then pick tactics. Should one write representatives in Congress, pursue remedies in the courts, or lobby Congress through established organizations? Work from within political parties? Demonstrate? Boycott companies that harm the Earth and/or buy preferentially from businesses that demonstrate good environmental and labor practices? Or—should one simply model a good example in one's own life, for instance by becoming vegetarian? Eating lower on the food chain saves habitat for wild species and can also save a lot of greenhouse gases. One can buy less and produce more of what one needs. As Henry Thoreau advised, "Simplify, simplify, simplify."

As more individuals and families live simply and self-reliantly, others will follow their lead. But while these changes in individual lifestyles are vitally necessary, they will not spread fast enough to accomplish all that humanity requires. Don't assume you can ignore the political arena. Every situation calls for different answers and usually more than one. We don't need to erect either/or barriers. Let's avoid acrimonious divisions between those who want to pursue political strategies and others who prefer to make individual changes, those who want to work through established organizations and others who want more direct action, or those who want to focus on the local community and others who feel they must work on global issues.

Sometimes what the country needs or what the species needs seems to be politically impossible. One must decide case by case when to compromise and when not to.

Persevere +++

Even if I knew the world were to end tomorrow, I would plant an olive tree today.
~Francis of Assisi, friar known as the patron saint of animals and nature, 1181-1226

Following a talk about my books, an elderly woman commented that some younger relatives were so wrapped up in their jobs, their entertainments, and their consumer 'stuff' that they barely paid attention to their elementary age children. Her point was that if people don't care about their

own children in the here and now, can we expect them to care about the future of their grandchildren, or other people's children, or the species itself? In the same discussion, two men said that they had given up on the human race doing what it takes to save itself—or else people might wake up only after horrible catastrophes of war or climate change had killed off a large fraction of humankind—at which point it might be too late.

But one must find a middle-ground that avoids both denial and discouragement and keep at least a shred of belief in the possibility of large transformations. Although the public has a short memory, and the economy has eclipsed other problems, current 'greening' is no fad. People are responding to a developing situation, and social networks can spread innovations rapidly. Adversity can be opportunity. Veteran green activist and environmental writer Jeffrey St. Clair says "The power of the people can still overwhelm the influence of big money. Anything is possible. Find your place, take a stand. People will join you."

Sometimes we miss encouraging news. A great environmental accomplishment has gone unnoticed by most of the public. Grassroots activists working especially in the South and Midwest have managed to block 166 proposed coal plants—a virtual moratorium on new coal-fired power plants. In other words they've prevented the release of carbon equivalent to about 9.5% of U.S. emissions. The result is that the United States has reduced its CO_2 emissions more than any other country. Minnesota environmentalist Michael Noble calls it "the most significant achievement of American environmentalism since the passage of the Clean Air Act and the Clean Water Act" in the 1970s.

Also keep in mind that people who live under devastating conditions in the Congo, Burma, Haiti, Gaza, Somalia, and all too many other places still manage to keep their courage to survive and sometimes to forgive and rebuild. We favored ones in the industrialized nations can do no less. The human race had at least one very close call about 70,000 years ago, during which our numbers apparently fell to only a few thousand. Let's not give up on us until the bitterest end.

Chapter 2
Some Basic Guidelines

Underlying this book are certain principles, assumptions, or agreements that I believe are necessary for the human race to survive. While not the only ones, they are basic. These guidelines include Human Unity Consciousness, Awareness, Reasonableness, Positive Prevention, Look for the Roots, the Golden Rule, Question Assumptions, Context, and Wholes.

Human Unity (or Species Consciousness)

I am a man, I count nothing human foreign to me.
~Terence, Roman poet, c.190-159 B.C.

Many religious traditions teach that all human beings are one and deserve our respect.
Christians say we are all children of God.
On the Indian sub-continent, when one person greets another saying "Namaste" it means "I salute or recognize your presence or existence in society and the universe."
The biological sciences affirm this truth that all humans are made on the same basic pattern. Our ancestors were not very different from us at birth. Modern infants no matter where they are born have similar potential.
In a spiritual, scientific, and historical sense we are one continuing race. But humans greatly need to raise their consciousness about this very basic truth.
Species Consciousness goes beyond internationalism, racial tolerance, or even the Brotherhood of Man to a deep understanding that we human beings all belong to one biological species. Our kind evolved over time, settling almost every sort of land habitat on Earth. Differences in skin color, body types, and eye and nose shapes all developed quite recently, as evolutionary time goes, while differences in language and culture are even more recent. With species consciousness, we know something of humanity's roots and identify with our species rather than with our nationality, gender, religion, class, or racial/ethnic group.
We have allowed slight physical differences to keep us apart. When ads tell us that thin lips, freckles, or body hair are repugnant, we learn to see another human being as ugly because of minor traits subject to fashions in human beauty. It is the same with language, cuisine, and other separating differences. Worse, we sometimes act as if some other tribe is not even human, letting primate xenophobia become channeled by propaganda and systematized as ideology. Instead, we could be as wise as dogs which are able to identify with their own kind whatever their physical characteristics, Great Dane or Chihuahua.

Humans may be divided by 6,500 or so languages, yet music, a baby at the breast, an outstretched hand, and a smile are universally understood. Let us grow solidarity with all the members of our one species: past, present and future.

Awareness: In the pressure of mass culture, many are so caught up in social conventions and ideologies that they have barely developed their own awareness. Society seems to require us only to be worker bees and consumers. Yet it is every person's mission to become a mature human being who does his or her own observing, feeling and thinking.

Bill Moyers notes that the ancient Israelites had a concept called *hochma* which was "the science of the heart, the capacity to see and feel and then to act as if the future depended on us."

Psychiatrist Eric Berne defined awareness as "the capacity to see a coffeepot and hear the birds sing in one's own way, and not the way one was taught." This ability to live at first hand is similar to what the two previous books called participating consciousness, a direct engagement with experience that predates and transcends words, abstractions, and ideologies. Berne notes that a few people "can still see and hear in the old way. But most of the members of the human race have lost the capacity to be painters, poets or musicians." Berne proposed that certain kinds of psychotherapy can help people recover this ability to live in the here and now, to be more alive. However, preserving this capacity really needs to start from the beginning with children.

Natural child-raising, outdoor play and green education help children keep their ability to live in the present moment, part of the whole. I still remember peak experiences from childhood, in a group that worked all day to build a house or fort out of branches and junk in a vacant lot, or playing 'King of the Hill' on a huge mound of snow left by snowplows, on a sub-freezing day with snow still fluttering down. I doubt children can have true peak experiences from TV or videogames. Adults too need to play outdoor sports and to be in their gardens, at the park, on the trail, or simply observing the sky.

One of the Burning Man festival's ten principles is Immediacy: "We believe that immediate experience is the most important touchstone of value in our culture." Another way to help recover our here-and-now abilities is to cut down drastically on screen time. One can train oneself to observe carefully. Many spiritual disciplines such as Zen meditation are directed toward training oneself to look at the world afresh, without all the learned preconceptions and social conditioning, thus achieving 'Beginner's Mind.'

Humans will not be able to solve the world's problems together without the quality of **Reasonableness.** In the words of Wendy McElroy, reasonableness is: "the intellectual tendency to base your conclusions and actions on evidence." McElroy says the aim of a liberal education is to develop the habit of reasonableness, but one need not go to college to become a reasonable person. (She herself is self-educated.) However, many people whether educated or not refuse to consider ideas that threaten their deeply-held beliefs and prejudices. Or they match their views to the conventional wisdom because it involves the least conflict with others. It takes a kind of courage to think for yourself—but otherwise you are not really 'thinking' at all!

Three dimensions of reasonableness are a willingness to listen to other people, a sense of proportion, and a commitment to inform oneself and think through issues.

We live in troubled times, when reasonableness seems to be in short supply. Frustrated people oversimplify and overdramatize the issues. Black-and-white, either/or thinking abounds. Cults proliferate whether religious, millennial, or based on popular culture or technology (e.g., the 'Cult of Mac'). The current exaggerated political/cultural partisanship is part of this picture.

Inability to compromise or to consider opposing views is the antithesis of reasonableness. And so are conspiracy theories that attribute the world's problems to some all-encompassing evil group or individual. The internet and social media make meme-spreading much faster and widespread, adding everybody's creative touches. Sometimes it starts to look like a new mythology.

Films such as *Stargate*, *Zeitgeist*, and *Thrive* have led to mythologies/movements—a patchwork of sci-fi, classic conspiracy theories, libertarian, green, and New Age themes. These become new cultish belief-systems—or are followers just entertaining themselves with outlandish ideas? It may be that humans deeply require some sort of mythology. Science fiction, fantasy, or gaming allows one to enter a mythology without actually believing in it. But overly credulous belief in a mythology is probably incompatible with reasonableness.

Discernment is required to discriminate between political conspiracy theories that can be supported by factual evidence, and classic conspiracy theories claiming that all-powerful, demonic influences control the world. There is a large and disputed middle-ground where some look for evidence and try to keep an open mind, while super-skeptics will not accept anything but officially-sanctioned information. They forget that actual political and economic conspiracies have existed historically and can be prosecuted under the law, in which the secret agreement of two or more people to commit an illegal act is defined as a conspiracy. Examples are the assassination of Julius Caesar and Abraham Lincoln, the Niger uranium forgery, various CIA operations, and the Enron fraud.

In contrast, classic conspiracy theories are akin to mythology and rest on little or no evidence. They satisfy psychological needs and are not amenable to factual evidence. It is a reasonable hypothesis that political operatives might hack an electronic voting machine, but the claim that Earth is being secretly run by reptilian extraterrestrials is not a reasonable hypothesis.

One area that needs a deep infusion of reasonableness is ill-conceived legislation that mandates narrow, culture-bound notions of morality. In Sudan, several hundred women were imprisoned for the crime of wearing trousers in public. In the United States, many people are imprisoned for possessing or trading small quantities of an herb, *cannabis sativa*, which has been used for religious or recreational purposes for several thousand years. In approximately 76 countries, largely in Africa and the Middle East, homosexuality is illegal, although same-sex relationships have an ancient history in many cultures and same-sex orientation is generally considered to be part of natural human variation.

In U.S. schools, 'zero-tolerance' rules can criminalize normal misbehavior of young children. In Ireland, a new law makes it a crime to publish or utter blasphemous remarks—punishable by a fine up to $35,000. All these laws and policies demonstrate a lack in the sense of proportion.

We can all encourage *reasonableness, discernment*, and a *sense of proportion*. Sometimes people don't know what they have been missing until they hear its name. +++

Positive Prevention: An advantage that humans have over other animals is foresight which allows us to act ahead of problems and prevent them by developing alternatives. This is being 'proactive.' For instance, diplomacy can often avert war. Contraception is usually a better choice than either abortion or an unwanted pregnancy. Government transparency heads off conspiracy theories (and conspiracies themselves), reducing corruption and citizen alienation. Preventing crime is better than punishing it. If a boy comes from an abusive family, has reading problems, is bullied in school, and perhaps suffers a head injury, let the community give him extra attention and support before he grows up to commit a violent crime and create more victims. Many a

criminal has exactly this kind of background yet collectively we let him live a life of neglect, fear, and humiliation until society finally mobilizes only to 'put him away' or execute him.

An area in great need of positive prevention is anti-drug efforts. William Moyers, a vice president of the Hazelden Foundation (a large, non-profit addiction treatment center) says 80% of U.S. efforts focus on stopping supply, leaving only 20% for prevention, treatment, and research put together. Moyers also notes that alcoholism creates more community problems than drugs but receives less attention. One focus for positive prevention is treating depression, which is often at the root of substance abuse. +++

Officials could reduce drug supply in more creative and beneficial ways than using military strategies and putting small dealers in prison. One example: U.S. funds help modernize and expand Afghanistan's pomegranate industry to replace opium production. Afghani pomegranates are probably the largest and best tasting in the world, and farmers can actually make more money growing them than they do growing opium.

In the medical field an ounce of prevention is known to be worth a pound of cure. An organization periodically comes through my town to offer low-cost medical screenings. These tests give early warning of strokes and other problems, but are not provided by Medicare. One assumes that catching potential medical problems early would cost Medicare less than treating them later. Also, Medicare spends huge sums on treating elderly people who have fractures resulting from falls. But where is the public health program for preventing such falls? +++

While prevention is a good rule of thumb, some actions taken in its name are not self-evident, such as performing mastectomies on healthy women with a family history of breast cancer. Another controversial program would prevent adolescent schizophrenia by using powerful anti-psychotropic drugs to treat youths who have early symptoms but who have not yet shown a full-blown psychosis. Drastic choices often depend on imperfect knowledge. A doctor once advised a surgery when tests were inconclusive "just to be on the safe side." For me this was not a sufficient reason and I decided to forego the procedure.

Widespread deployment of street surveillance may prevent some crimes but simultaneously allow a dangerous degree of government intrusion into everybody's lives. In all these and other cases the people directly involved must determine which is the lesser of two evils. Some actions that purport to be prevention clearly threaten greater ills than the ones they would avert. If it involves coercion, it is not positive prevention. Preemptive war is not a form of positive prevention but rather an excuse for aggression.

Certain attitudes keep us from employing prevention. A moralist may prefer to let people suffer from their mistakes because he gets a psychological payoff from the dramas of blame, guilt, and punishment. Another obstacle is Bottom-Line mentality with its time-frame of quarterly payments to stockholders. Thinking goes like this: 'We can't suddenly stop manufacturing baby bottles when new research shows they contain a toxic ingredient because, after all, we have a responsibility to shareholders.' This responsibility is perceived to be greater than responsibility to the public or to the species. Politicians tend to operate mainly in the short-range bounded by the next election cycle, responding to the issues of the moment.

Some people resist any external restrictions on research and industrial production because they identify so deeply with capitalism and cutting edge science-and-technology. Here are those members of WAMLIC (white affluent male libertarian internet culture) for whom individual freedom is the highest good. They believe in *laissez-faire* in all areas, including the scientist's right to research and develop and the entrepreneur's right to produce whatever they please.

In contrast, the Precautionary Principle urges a conservative caution before plunging into new technologies. The Wingspread Statement of 1998 says in part: +++

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically. [Thus] the proponent of an activity, rather than the public bears the burden of proof. The process of applying the Precautionary Principle must be open, informed and democratic, and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.

Look for the Roots: In order to prevent harms, one must look deeply into a situation. For instance, which is the problem—that toddlers are seeing too much violence on TV or that toddlers are watching TV at all? Or consider this: a letter to the editor of the *Futurist* from Bruce Lloyd of London notes the vast majority of crime involves robbery and violence. Lloyd suggests that to reduce robbery, society should reduce obsessive materialistic consumerism, increase transparency in government and business, and abolish secrecy-driven tax havens. (His definition of robbery obviously includes white-collar crime, as it should.) Since violence is often due to a breakdown in communications, Lloyd proposes much greater attention to conversational and dialogue skills throughout the global educational system. +++

The roots of current racial inequality in the United States are more structural than simply a matter of hearts and minds. There can be "racism without racists." Even as outspoken bigotry largely disappears, segregated neighborhoods and schools and large black-white gaps in health and education still remain. Structural racism is our challenge.

The word 'radical' means to get to the roots of a problem, and I promote radicalism in this sense, not the connotations the word has picked up of extremism and violence. We could look beyond the current war or wars to basic problems such as *standing armies*, which several U.S. Founders, later presidents, and other political leaders warned against. One problem identified as key to many economic and political problems is the legal concept of *corporate personhood*.

The Golden Rule +++

The essence of the human spirit is: Preserve life, promote life, help life to achieve its highest destiny. The essence of Evil is: Destroy life, harm life, hamper the development of life.
~ Albert Schweitzer

The Golden Rule is the one religious doctrine which virtually everybody believes, whether they are atheists or Zoroastrians. The Golden Rule appears in some form in every major religion and most minor ones, as well as in non-deistic ethical systems. Common formulations:

Islam: *No one of you is a believer until he desires for his brother that which he desires for himself.*
Buddhism: *Hurt not others in ways that you yourself would find hurtful.*
Taoism: *Regard your neighbor's gain as your own gain, and your neighbor's loss as your own loss.*
Judaism: *What is hateful to you, do not to your fellowmen. That is the entire Law; all the rest is commentary.*
Christianity: *All things whatsoever ye would that men should do to you, do ye even so to them.*
Confucianism: *Surely it is the maxim of loving-kindness. Do not unto others that you would not have them do unto you.*

Once the Golden Rule becomes habitual, human good will is expressed in *loving-kindness,* an unconditional love that embraces all: "Be happy, be peaceful, be free of suffering." According to a Buddhist writer, Joseph Goldstein, "Although we may not always live in a steady state of loving feeling, through practice we can learn to touch it many times a day."

Question Assumptions

The fundamental western belief that there are rational ways of organizing the world which will bring benefit to all has been at the root of every human-made catastrophe that has overtaken us, yet many of us still believe that we have a bounden duty to bring our simplistic, universalizing, 'progressive' systems of government, economics, education, policing, judiciary and morals to every part of every society on the planet.
~Roger Osborne, *A New History of the Western World*, 2008

Another way of putting this is that we all need some humility. We need to recognize that the way *we* do things, the way *we* have always done things, is not necessarily the way everybody should do things, or the way anybody should do things here and now. In fact with all good intentions, the western—and especially American—desire to give everyone on Earth the same benefits that we enjoy is the attitude of an imperial master. Circumstances may have changed so that we do not have the benefits we think we have, or we are overlooking the concomitant costs of those benefits. It may be that others elsewhere would like some of those benefits but not the whole package. It may be that we have something to learn from them.

Context, Context, Context: While looking at each component separately may help with repairing mechanical objects, for most of the complex matters of life we need to look at systems and wholes. In focusing on individual problems and details we are only doing this for the sake of convenience—not because events and issues ever exist in isolation. We get in the habit of thinking so because of education based on standardized tests, occupational specialization, and media stories that seldom give the full background. In the news everything seems to happen in a vacuum, to come out of nowhere, and then it's time for the next news cycle. We especially lack historical context, global context, and ecological context.

U.S. public and political life is contaminated with continual quotes out of context and selective quotes or citations of evidence. Here in the 'Bible Belt' where many still argue by quoting (or misquoting) selected passages from the *Bible,* the custom has spread to political and environmental arguments as well. If some part of the world had unusually low temperatures last year, it is taken as proof that global warming is a hoax—never mind what the average or mean temperature was across the globe. You need only the selected facts that make your case.

It's true that looking at the whole means absorbing a lot of information at once. We may indeed suffer from too much information, too much to take in. But who then is supposed to look at the whole species or the whole planet? Do we leave that up to Congressional aides, President Obama, UN bureaucrats, and assorted think tanks and pundits? It seems to me that the more of us who are looking at the big picture, the better prepared we all are for what comes next. Among my acquaintances are many people, especially retired people, who spend much of their time reading and accessing information about current events and aspects of the human situation that are new to them. They serve as a witness network for the rest of us.

Wholes

When you tug at a single thing in nature you will find it attached to the rest of the world.
~John Muir, American naturalist and conservationist, 1838-1914

An ancient piece of wisdom which served our species well for tens of thousands of years, a basic or original consciousness, has been largely ignored or even denied for 300 years of mechanistic, atomistic, Cartesian thinking (modernity). Wholeness may well be the most controversial of these guidelines, drawing fire from those who are locked into 19th century scientific worldviews, either/or ideologies, selfish individualism, and bottom-line thinking.

The science of ecology is concerned with the very complex interactions and mutual dependencies of living entities in ecosystems. No wonder that starting a few decades ago, many non-scientists borrowed the concept of ecology to stand for that ancient, more universal spiritual principle of interconnection—ecological wisdom rather than ecological facts. Some professional scientists were at first upset by this intrusion into their domain, but most have learned to tolerate it, perhaps seeing more trouble caused by those who refuse to see any connections. Widespread realization of the dangers from human-caused climate change rests on this ecological kind of thinking—how one system of winds or water currents or tropical forests is interrelated with others, and how tipping points in one of them can cascade into disastrous conditions in others.

Let us bring interconnections back into the open and into the foreground. Instead of always dividing things up into smaller and smaller parts in order to analyze them, we look at the whole, a method sometimes called 'holistic.' One may also look at connection on the personal level. A person reaches true maturity not at a certain age but when one learns to integrate (or re-integrate) all parts of oneself, from the animal to the spiritual, and including the shadow personality or lower self. +++

To repeat, the guidelines are: Species Consciousness, Awareness, Reasonableness, Positive Prevention, Look for the Roots, the Golden Rule, Question Assumptions, Context, and Wholes.

Part One: Our Mental Life

Chapter 3
A Collective Mind Is a Terrible Thing to Waste

The biggest challenge we face is no longer the problem itself, but our inability to see it.
~Andy Johnston, Ontario, letter to *Ecologist*

As we face more than one life-threatening problem, humans need to safeguard our inborn ability to reason and imagine—we owe that much to our species, as well as to ourselves as individuals. If patriots are expected to lay down their lives for the nation-state, we could with more justice expect human beings to think at our best to keep the species and planet alive.

The three or more billion of us who live on less than $2 a day lose a lot of our collective potential to malnutrition, preventable diseases, pollution, war traumas, and deep poverty that sends children to work instead of school. Yet even in wealthy industrial nations such as the United States, lifestyles and working environments do not support ideal mental functioning. Individuals typically suffer from sub-optimum nutrition, environmental pollution, stress, and constant distractions. Omnipresent media and advertising actively discourage individual thought. Some social customs and institutions promote a narrow outlook, and modern lifestyles do not permit deep, reflective thinking.

Since the social and the biological interweave, we begin with what an individual can do to attain a healthy mind in a healthy body. Optimum functioning benefits you, me, and potentially the entire human community.

Care and Feeding of the Brain

The human brain is the most complicated organization of matter that we know.
~Isaac Asimov, *The Three-Pound Universe*

It would help us all to know something about our remarkable thinking apparatus, sometimes described as an assemblage of three brains. The oldest part is the reptilian brain, in charge of unconscious body functions and repetitive behaviors. The mammalian or emotional brain (also known as the limbic system) is concerned with instincts, feelings, fighting, and sexual behavior. The overriding concerns of the emotional brain are to maintain one's safety and maximize one's pleasure, while avoiding danger and pain. Atop the other two parts, the most recently developed and uniquely human part of our brain, the neo-cortex, is capable of reasoning. However, its logic still depends on what the emotional brain wants—that is, safety and pleasure above all else.

The brain contains about 100 billion cells, and these cells make hundreds of connections with each other for a total of one quadrillion connections (that is a one followed by 15 zeros). The myth that we use only one-tenth of our brain cells is based on misunderstanding of early brain research. At the same time, we could make better use of this three-pound powerhouse, starting with taking good care of our whole selves. Thinking cannot be separated from physical bodies. Obviously if someone is sleep-deprived, in pain, or running a fever the old noggin fails to perform well. Constant junk food combined with sedentary TV-watching does not produce the sharpest minds, and a habit of drinking too much alcohol will definitely kill off brain cells. To

improve the performance of one's grey matter, start with all the healthy things that benefit one's whole body, such as good diet, sufficient sleep, exercise, and moderation in all things.

Thinking is a workout, just like aerobics. Dr. Gary Small, UCLA neurologist, notes that the brain accounts for a fifth of the adult human body's energy expenditure, and children's brains may use up more than half the calories they consume. A Canadian study reported that women ingested about 25% more calories after an intellectual exercise than after just sitting quietly. Researchers found that during the mental workout, blood samples showed an increase in levels of the stress hormone cortisol and greater fluctuation in plasma glucose and insulin levels. The study's lead author, Professor Angelo Tremblay, said that people tend to underestimate the biological impact of mental work. Creative thinking may take even more calories. Daniel Pink says that cognitive scientists at Drexel and Northwestern Universities discovered that the flash of insight just before an 'Aha' moment is "accompanied by a large burst of neural activity in the brain's right hemisphere."

In an attempt to increase their mental energy and motivation, many Americans are addicted to caffeine in the form of coffee or cokes. They assume that thinking faster is thinking better. But pressured thinking does not allow for the all-important process of *reflection,* a habit of mind that needs far more respect than it gets.

Diet is definitely related to mental functioning. Food grown in depleted soils with only chemical fertilizer lacks essential nutrients. Overly processed food loses many of the nutrients it started out with. The addition of a host of synthetic additives to processed foods triggers allergies and other symptoms in sensitive individuals; worldwide, the incidence of allergies is increasing. There is plenty of evidence that once people stop eating indigenous diets and start eating 'civilized' food, their health declines dramatically. These and related problems have led to the Fresh Food Movement that includes community gardens, teaching farms, community-supported agriculture, and farm-to-school programs. Many other organizations, movements, and writers are concerned with food since it is such a basic part of human health. Here I only wish to remind us that our diet can help or hinder our thinking.

Use It or Lose It: Research shows that exercise helps mental functions. Swimming, running, cycling, hiking, skiing, a daily walk are good for the brain as well as the body. Unfortunately, watching other people play team-sports on TV has largely replaced doing it yourself or even watching live games. In my mother's day her little town fielded most of the men from age fifteen to forty-five to play baseball against men of nearby towns. The rest of the town came out to watch. In my childhood, we constantly jumped rope or roller-skated around the block, and we played sandlot softball and touch football without benefit of coaching or competitive parents on the sidelines to make trouble. Local parks had tennis courts, a favorite place to spend a date, while many an inner city lad practiced his basketball moves on a makeshift court. In other words, sports were (and should be) a democratic endeavor that just about everybody does.

Now team sports have been commodified or, in the case of youngsters, over-organized and made more competitive than necessary. Sometimes the lust for winning replaces good sportsmanship, when people identify with high school, college and professional teams as if they were warring tribes. Team identifications and rivalries resemble the hyper-partisanship now evident in U.S. political life. Are athletics a useful safety valve? Or are both arenas—athletics and politics—becoming overly combative?

Many public school systems spend an unconscionable portion of their budget on athletics programs that involve only a tenth of the student body and put too much community pressure on

them to win. College football and basketball are big business, and it is hard to see what they have to do with the classic idea of a university. Meanwhile, men who evolved to run after game, to climb trees and swim across rivers now sit for hours in front of a television set to watch the virtual reality of other bodies running and throwing a ball. Coincidentally, the country has an epidemic of obesity (rates began to rise around 1980—does anyone know why?)

Instead, let's show our preference for do-it-yourself, hometown sports. A nation-wide campaign to promote participatory sports could have several benefits. Each city could divide up into neighborhoods large enough to field several adult teams such as softball, soccer, rugby, and basketball. They could be coed or not. Public school coaches might earn extra income by coaching adults in the early evenings and weekends, not to create winning teams but to help participants achieve their personal best. Arrangements could be made for community teams to use school facilities at off-hours. +++

The biggest advantage of this plan would be to draw people away from watching television, away from virtual reality and into healthy exercise. It would allow them to have fun with their neighbors and help unify the 'hood. Participatory sports would draw people's attention back to their own abilities and accomplishments and away from unhealthy preoccupation with those who are at the very top in every field (discussed as 'monoism' in a previous book).

Exercise helps one think better but to exercise the mind more directly we have crossword puzzles, Sudoku, board games, jigsaw puzzles, and some of the electronic games. A well-made movie or a good movie makes you think about it afterwards, for days or years. Good conversation with friends is always mind-stimulating.

Restoring Attention

Shall I not have intelligence with the earth? Am I not partly leaves and vegetable mould myself.
~Henry David Thoreau, 1817-1862

We humans evidently have a psychological need for nature, which is hardly surprising since the vast majority of human experience has been spent outdoors with the rest of the flora and fauna. But now we spend perhaps 90% of our time indoors. An artificial, sedentary lifestyle has developed over only a few generations, with medical and public health consequences. There's scientific evidence that natural settings not only improve mood but also the cognitive functions.

Attention restoration theory (A.R.T.) was developed by psychologists Rachel and Stephen Kaplan in the 1980s with additions by later researchers. In *The Experience of Nature*, the Kaplans examine how people perceive nature and what psychological benefits they seem to derive from various natural settings. The Kaplans find a surprisingly strong impact on people of all ages and cultural backgrounds. They looked at the effects of and preferences for each of the various natural settings such as urban parks, backyard gardens, and wilderness. They asked whether some natural patterns were more effective than others and how city designers and developers could incorporate all this knowledge into urban design. +++

Specifically, the idea of A.R.T. depends on the fact that there are several kinds of attention, one of them being *directed attention* which requires effort to focus on the task at hand, by delaying any irrelevant emotions and tuning out distractions. The task may be so interesting that it allows *effortless attention* or a state of flow. Even so, nobody can keep up such concentration

indefinitely, and eventually a person loses his focus, suffering from *directed attention fatigue*. He or she may then become irritable and easily distracted until one's attention ability is restored.

Urban environments are not as good for recharging, because they tend to require continuous scanning—to make sure, for instance, that one doesn't get run over by traffic. One's attention goes to traffic-lights, street signs, shop window displays set up to lure passersby, faces to view for acquaintances. In contrast, natural environments are ideally suited to restore attention. The "soft fascinations" of nature provide stimuli that don't grab for attention or require constant control. As Jonah Lehrer says, "A walk in the woods is like a vacation for the prefrontal cortex."

There is also some evidence that natural environments can treat ADHD. +++

Some have suggested that natural environments are richer in visual fractals. Fractals are mathematical objects or images constructed by repetition of mathematical formulas. This results in unique, often strikingly beautiful images that consist of repeating patterns. Fractal construction is part of living systems, so the mind likely finds it easier to encode and process.

Preserve the World's Mental Abilities: Theresa Brennan in *Globalization and Its Terrors* suggests that the next world-wide activist movement will be based on health. In fact 2012 saw a string of protests across China against industrial projects that people feared would damage public health—a petrochemical factory, a coal-fired power plant, a copper smelter, and others. These protests involved thousands and often became violent.

Whatever affects health also affects thinking processes. Malnutrition, especially among infants, preschool children, and pregnant women, affects both physical and mental development. Kathleen S. Gorman of the University of Vermont reviewed studies of the relationship between malnutrition and cognitive development. They showed "significant effects of supplementation on broad measures of cognitive development during the preschool period." Early supplementation continued to affect adolescents in achievement-related tests such as reading and numeracy. But Gorman also noted that not only diet but other living conditions need to be improved for children to develop their full potential.

Many commonly used chemicals have neurocognitive effects. For instance, hundreds of millions of people work with pesticides. Prenatal exposure to organophosphate pesticides can lower children's IQs by as much as seven points. Research shows that farmers and others who routinely handle pesticides hasten cognitive decline as if they were aging faster. The condition is called Mild Cognitive Decline (MCD). One study showed that workers in French vineyards with pesticide exposure were five times more likely to score poorly on a battery of neurological tests than those without such exposure. The Bordeaux study measured abilities such as memory and recall, verbal skills, and language retrieval.

Pollution of many kinds is widespread across the world and affects mental processes. Car emissions contain aromatic hydrocarbons which many studies show have lasting effects on the brain and are associated with childhood autism, anxiety, and reduced reasoning ability. Ingesting or breathing certain substances can directly injure the brain; these include organic solvents, low levels of carbon monoxide, and carbon disulfide. Both lead and mercury interfere with brain development in children or fetuses. A team of doctors at Mt. Sinai calculated that mercury exposure in the womb so lowered IQ levels that it cost the United States $8.7 billion/year in lost earnings potential. Mercury emissions from coal-burning power plants or cement factories are therefore dangerous to our collective intelligence.

Radical transparency would show those of us in the industrial countries where our pollution and toxins are headed to poorer countries, such as ship-breaking or disposing of e-waste, and help to stop those trajectories. +++

A study in Mexico compared mental abilities of 73 children: some from heavily polluted Mexico City, the others from the relatively clean city of Polotitlan. Not only did the Mexico City children perform much worse on cognitive tests, but a sample of children given brain scans showed signs of lesions at the front of their brains. Researchers concluded that high levels of particulate pollution in Mexico City could cause brain inflammation in the frontal and prefrontal cortexes, affecting cognition and memory.

Daniel Goleman says that the brain is especially vulnerable to invading chemicals because it uses a wide variety of molecules to send its chemical messages. That means there are many more ways that external molecules can interfere with its processes. He cites Dr. Martha Herbert, pediatric neurologist at Harvard Medical School, who says an emerging medical model is that a great many diseases have one root cause, chronic inflammation induced by stress, including environmental stress.

Maternal use of alcohol, tobacco, and some other social drugs can permanently impair fetal cognition. A more subtle effect from the combined effect of environmental toxins and sedentary living associated with television/computer screens is precocious puberty, especially among girls. In the United States, female puberty is now occurring between one and two years earlier than it did just 30 years ago. Ecologist Sandra Steingraber in a report for the Breast Cancer Fund says she and other scientists have found alarming effects of early puberty on health and social development, but here let us focus on the mental effects: once sex hormones kick in, the brain loses some of its capacity to build new connections.

Apparently several contributing causes or sufficient causes result in early puberty. A number of studies have implicated increased obesity rates, soy infant formula and processed soy, excessive television watching, and hormone-disrupting chemicals such as organotins, phthalates, PCBs, and BPAs found in disinfectants, outdoor paints, nail polish, food packaging, and many other common items. [Avoid hormone-disrupting chemicals. +++]

The USA ranks near the bottom of industrial nations on life expectancy and infant mortality rates, and a 2009 report from a group of 89 retired generals states that about three-fourths of the nation's youths age 17 to 24 are not eligible for military service because of poor education, overweight, or various physical and mental ailments. One in four potential recruits lacks a high school diploma, one in four is overweight, and one in three has a health problem such as asthma, poor eyesight or a mental problem that would disqualify him or her for military service. This suggests that the U.S. population is not living up to its biological potential. Preserving our mental powers is just one added reason to insist on a beefed-up EPA, to avoid unnecessary consumer products, to cut down drastically on children's screen-time, and to play ball with them. +++

Some prescription drugs can cause brain damage. Cholesterol-lowering medications (statins) have become the most popular, widely-distributed prescription drugs in the world, yet can have side effects that include memory loss and mental confusion. This has been known for several years but only recently did the U.S. FDA rule that warning labels be put on pill containers.

Another issue concerning cognition is the very widespread use of psychiatric drugs, particularly for children. U.S. sales of psychiatric drugs for all ages—anti-psychotics, antidepressants, anti-seizure and ADHD drugs—add up to $40 billion a year, according to investigative journalist Evelyn Pringle. Robert Whitaker (*Mad in America)* notes that the numbers of mentally disabled people greatly increased during the same time period that a new

generation of psychiatric "wonder drugs" came on the market, starting with Prozac in 1987. Over the long term "you find with every class of these psychiatric drugs a worsening of the target symptom of depression or psychosis or anxiety… compared to placebo-treated patients."

The U.S. Agency for Healthcare Research and Quality reported that in 2006 the nation spent more money treating mental disorders in children aged 0 to 17 than for any other medical condition. Americans buy 94% of ADHD drugs, which makes one wonder if the ailment is limited to American children. Several large pharmaceutical companies have paid fines in the billions for illegally marketing psychotropic drugs prescribed to children.. Jim Gottstein, leading attorney in a public interest law firm, the Law Project for Psychiatric Rights, says that prescriptions using off-label psychotropic drugs for children and youth, often paid for by Medicaid, constitute Medicaid fraud.

Parents or anyone contemplating the use of psychotropic drugs should educate themselves first, lest they do more harm than good.

Blessed Sleep

If you are sleep-deprived for a day, your brain functions about as well as that of a person who is legally drunk.
~Larry McCleary, MD, neurologist

A number of studies suggest that sleep deprivation is common in the United States, especially for shift workers, adolescents, college students, working mothers, parents of newborns, and people with more than one job. A second job can reduce sleep averages by as much as 10 hours a week, according to a Maryland study. Shift work can be especially disruptive, and rotating shift workers sleep the least of any group. The Bureau of Labor Statistics estimates about 15.5 million people work evening, night, or rotating shifts, including truckers, workers in industries on a 24-hour schedule, people who provide critical services such as police, firefighters, and staff at utilities and hospitals, and those who serve all the foregoing. Shift work is increasing because people who work odd hours need support services such as gas stations, grocery stores, and restaurants that are open on the same 24-hour schedule.

Daytime sleep tends to be shorter and less refreshing than sleep at night. The body has its own circadian rhythm that one ignores at one's peril, building up a sleep debt that demands payment, causing a drowsiness that can be dangerous. Night workers are more susceptible to mistakes and accidents both on and off the job. We need to respect our natural cycles. New research shows that as many as 15% of human genes operate on a schedule, which in turn influence many biological functions such as metabolism, cell division, and thinking processes. Industrial and economic demands too often ignore the fact that we are biological creatures.

Students comprise another sub-group that often suffers sleep deprivation. Biological changes during puberty reprogram the adolescent to go to sleep later and wake up later. It is known that adolescents tend to sleep late, yet public school schedules often begin by eight a.m. As for college students, many hold jobs at the same time they are competing for grades and trying to keep their scholarships. Dr. William Dement of the Stanford University Center for Sleep Disorders notes that 55% of drowsy driving fatalities occur under the age of 25.

Lack of sleep affects mood, and a recent study suggests it can cause deeper psychological disturbances. Brain scans showed that compared to a control group, the amygdala or emotional forebrain of subjects deprived of sleep showed 60% more activity when shown gruesome images. The lead researcher, Matthew Walker, says that "The amygdala seems to be able to run

amok." He believes that one function of sleep may be "[to prepare] our emotional brains for the next day's social and emotional interactions." In other words, we need sleep to calm us down.

How do we overcome the sleep deficit? Answers range from tips for the individual to public perception to a different sort of economy. Hospital residents, truckers, and airplane pilots should not be forced to work extra-long hours. We need more employers who allow strategic naps at work, more public respect for sleep, and a step back from the frenzy of global capitalism that Theresa Brennan described as consuming the planet and its people as rapidly as possible. +++

Noise and Other Stress: People in certain occupations are exposed to toxins, loud noises, or repetitive motions that cause disability and pain. None of this improves thinking processes. A Cornell study found that in open-style offices, even low-level noise creates additional stress, measured by the amount of epinephrine, a stress hormone, in the clerical workers' urine. Cubicles don't help much with the noise situation, according to Gary Evans of Cornell, an expert on environmental stress, who suggests that cubicle residents make agreements to keep voices and other noises low, perhaps using noise-cancelling headphones or other products. +++

The World Health Organization has been researching the relationship of noise and stress, reporting that long-term exposure to traffic noise could be responsible for hundreds of thousands of deaths annually through ischemic heart disease. A study of children living near German airports shows noise can damage long-term memory, reading ability, and speech perception.

WHO also gathers research on Electrical Hypersensitivity, a health condition that occurs in some places because of poor power quality or 'dirty electricity.' It may be due to stray voltage, especially on farms in areas with poor utility infrastructure and grounding. Another cause is EMF from electrical devices. Use of electricity has increased dramatically over the past half century, with stress on aging electrical systems. Power is 'dirty' when it contains high frequency signals flowing through overloaded wires. More technically, scientists Magda Havas and David Stetzer describe dirty electricity as "a combination of harmonics and transients generated primarily by electronic devices and by non-linear loads." (Dirty power is also defined as electricity that causes problems in computers due to spikes, significantly higher or lower average voltage, or plain noise. Together they are called 'power hits.')

A study by Havas and Stetzer found that improving power quality in homes and schools by using a Graham/Stetzer filter also improved a number of symptoms suffered by individuals such as chronic fatigue, depression, memory loss, tinnitus, and certain symptoms associated with diabetes and multiple sclerosis. +++ The two Czech researchers estimate that as many as 50% of the population may be hypersensitive, with children more sensitive than adults. They suggest that electrical hypersensitivity may interfere with education and contribute to disruptive behavior associated with ADD. Remember that no less than computers, humans are electrical beings too. Almost all our cells can generate electricity. The nervous system operates on it.

Preserve Peripheral Vision: Frank Forencich points out another disadvantage of working in cubicles: it frustrates ancient impulses to check out the landscape from time to time to make sure no predators are out there. Forencich is especially concerned that our chronically focused vision from watching television, using computers, and doing other close work may result in an atrophy of peripheral vision. He says this in turn could affect our mental life: "Monotonous visual inputs may very well lead to static, stereotyped thinking." Working in a box, looking straight ahead most of our day even for our entertainment, could well lead to thinking in a box and an inability to see alternatives, that is, it could lead to ideology and rigid conformity.

Forencich proposes several antidotes to this narrowing focus, noting that the most obvious solution lies in sports and games, especially "open field challenges that include lateral, blind spot challenges" such as running with the football, open court dribbling with the basketball, and soccer—or even a simple game of tag. Regular exercise of whatever kind is helpful, and if it involves panoramas or open-field running, so much the better for one's peripheral vision. +++

Dr. Small says that video game playing can improve peripheral vision. Forencich suggests seeking out literal panoramas. "Climb up on rooftops, hilltops and mountain summits. Go up in light aircraft [and balloons] when you get the chance." Also he advises one to look for intellectual panoramas such as interdisciplinary studies and integrative approaches. Remember Hazel Henderson's advice to act like a movie camera, with a zoom lens that can move back and forth between panoramas and close-ups. Forencich also says, "Pay closer attention to relationship, context and environment." That somewhat resembles how East Asians think; it is more field-dependent, more 'right-brained.' +++

Another aspect of vision is the spectrum of light to which we are exposed. Our species evolved to live in sunlight but many of us now live most of our hours under artificial light sources. Pioneer photobiologist John Nash Ott coined the term 'malillumination' to describe the negative effects of sunlight deficiency and of artificial pink or old-style fluorescent lighting on behavior, learning and health. Ott developed the first full-spectrum light bulbs to include a wider range of wave-lengths. He advised time outdoors in natural light without wearing glasses. +++

Anxiety and Depression:

While negative moods might promote focused attention and rigorous analysis, there's good evidence that happiness promotes a more freewheeling kind of information processing, which leads to more creative insights….The moral is that emotions influence how we process and pay attention to information, and that different kinds of cognitive tasks benefit from different moods.
~Jonah Lehrer, "Mood and Cognition"

Thinking cannot be separated from emotions. A little melancholy may give us the edge on practical tasks; a cheerful optimism supports creative solutions. But truly negative moods and conditions (or manic excitement) do not help us use the gift of reason. They also color our general beliefs and ideologies.

Anxiety or chronic, low-level fear can result from job insecurity or other worries about income and debts. Or it may arise from worry about family members, relationships, health, and other personal issues. Excessive details and distractions (see later) add to anxiety. People worry about their adequacy to perform their given social role as in 'too much to do, not enough time to do it.' Many of us, especially women with young children at home, or people working more than one job, are pulled in a great many directions at once. People are often 'over-amped' by work, study, family obligations, personal needs, and confusing social expectations about how much one human being can do in a given amount of time. Multi-tasking has become a social ideal, whether or not people can actually accomplish it.

Anxiety leads people to take intellectual shortcuts, to cut corners. It is not conducive to creative thinking. Neither is depression, referring not to persistent clinical depression but rather a cyclical low that most people seem to experience from time to time. During melancholy, the whole thinking process seems to slow down and becomes 'stuck' or repetitive. Thoughts go in

circles, dwelling on the negative aspects of things, replaying unpleasant moments. One is not bubbling with new ideas, to say the least. The mind acts more like a zoo animal pacing its cage.

For most of us, most of the time, meditation, yoga, tai-chi, running, making or listening to music, nature hikes, gardening, bird-watching, swimming, and similar activities can relax anxieties and focus the mind so one thinks better. Everybody needs some solitude and exercise, social contacts and fellowship. All of us need to center ourselves in natural settings. Having a pet is helpful. For people who tend to be pessimistic, a therapy called "resilience training" helps them learn to identify and overcome negative patterns of thinking. The object is not to become blind optimists but rather hopeful realists.

While conscious attempts to improve one's outlook are useful, there is a physical basis for these cyclical down moods. Depressions differ, some triggered by external events, others with more internal causes. If someone loses a job or is robbed, if the wedding is called off, there is 'a reason' for the unhappiness—other people are more likely to understand and excuse it. But the physical causes, whatever they are, are also real. While one can sometimes help a mildly depressed person to raise his or her spirits, it is not at all helpful to act as though every depressed person willfully chooses to be unhappy.

Depressed people often self-medicate with alcohol or illegal substances, or they gorge on food, leading to more things to be depressed about. As we've noted, prescription drugs present their own problems. An *Adbusters* article claims that 25% of people in both developed and developing countries experience a psychological disorder in the course of their lives, also that by 2020, depression will become the second-leading global cause of death and disability (heart disease is the first—and it has a link with stress).The numbers are an extrapolation—'if present trends continue'. Yet we could probably do a lot to reduce depression, directly and indirectly. Most important, let us not blame or reject those who cannot adjust to a society that is more designed for making money than for human well-being.

If societies did a better job of identifying and treating depression, this would go a long way toward reducing alcoholism and other substance abuse that reduces people's mental functioning along with other bad results such as domestic abuse, automobile accidents, and crimes. Happier people would increase their productivity in all areas. From a cost/benefit viewpoint, social attention to depression would pay for itself many times over. Besides seeing depression from the medical viewpoint or dealing with it as a matter of individual responsibility, we need also to look at conditions of society that contribute to depression, such as income insecurity, lack of healthcare, homophobia, racism, or demeaning portrayals of older people in the media. +++

One effect of depression is to make people less likely to want to deal directly with species-wide challenges. A depressed person sees the state of the world as just another thing to worry about. Depression leads to cynicism, pessimism, and mental habits such as blame and scapegoating. This is definitely not a problem-solving mode. In an attempt to forestall depression, some insist on a relentless optimism that often resembles denial. Neither does this attitude help us to resolve real species problems or personal ones.

Distractions

At times the whole world seems to be in conspiracy to importune you with emphatic trifles.
~Ralph Waldo Emerson, "Self-Reliance"

While annoying, they are so much a part of our lives that we tend not to add up all the little details that crowd our brains. A large part of daily distraction has to do with advertising, some with bureaucratic paper shuffling and legalese, while most of the rest comes from our high-tech culture. Advertising includes television commercials, newspaper inserts, Internet spam and pop-ups, junk mail, telemarketers, mail catalogs sent every month until the company gives up on you, store ads broadcast while you're shopping, billboards, and glossy magazines that are nothing more than a series of ads posing as reading matter.

Computer expert Christopher Null claims that spam constitutes 97% of all email traffic. Tess Rheinhardt says that between 1992 and 2002, telemarketing calls rose from 7 billion a year to 51 billion, while prime time TV commercials that took 9.5 minutes per hour in 1960 now take 15 minutes per hour—or one-quarter of TV time. And the school kids are introduced early. Juliet Schor in *Born to Buy* reports that the average American child sees 40,000 advertising messages a year, with corporations spending about $15 billion yearly to reach children 12 and under.

Credit companies keep mailing blank checks, so for fear thieves could use them I must spend time shredding. Remember when the only thing you had to worry about was whether you had your keys and had turned off the burner under the teakettle?

Worthy causes phone, mail, and email to request donations whether or not you have any money to give them, and some callers hardly take no for an answer. Trying to get ahead of a bad economy, you keep track of store sales for essential items, and maybe you clip grocery coupons. You must keep up with oil changes, car tune-ups, dental check-ups, child vaccination schedules, and pet shots. You must remember to refill your prescriptions and renew your subscriptions. You are supposed to have your furnace and air conditioner checked before the heating or cooling season and to change your filters every few months. The lawn must be mowed regularly or the Code Compliance people will get you, and the gutters need cleaning again.

A modern person must remember umpteen zip codes, area codes, addresses, passwords and pin numbers, fax numbers, instructions of many kinds, perhaps lock combinations. Or else one must write it all down someplace, or buy an electronic gadget to remember it. Then a person must remember where he has put the list or the electronic gadget, and if someone else finds the gadget they might steal his identity. Getting automobile licenses and tags, paying one's taxes (property taxes, personal property taxes, state and federal income taxes), even keeping up with one's bills is often needlessly complex. If there is a mistake on a bill, it may take an hour or two of playing with phone or computer menus that do not seem to include your particular concern.

 Voting is also harder than it should be. Many of the people who cast provisional votes that end up not being counted have simply forgotten or never noticed the location of their voting precinct. Or perhaps they work on the other side of town from their precinct. Universal registration would solve this problem. +++

Another huge area of distraction is pop culture, with obligatory knowledge of the lives of celebrities with their marriages, divorces, affairs, births and adoptions, diets, feuds, mental health problems, choice of wearing apparel, and court dates. Also, one must keep track of the latest films, musical groups and musical styles, sports scores and players, the most-watched television programs, ever-changing fashions, prices and choices in luxury consumer goods, stylish hairdos, soap opera plots, popular trends, and the latest slang. Mainstream media is so full of this fluff that one picks it up by osmosis. Young people in particular feel social pressure to know all about these fads. This is the very age group that historically has produced many activists and idealists working for change. Between jobs, pressure-cooker education, and pop culture, when do they

have time and energy to work for the species? Fortunately, some still pick social or environmental activism over keeping up with the latest thing.

All the foregoing does not even include white collar jobs where one must remember a great many details and where people constantly churn out needless busywork and paper pollution. The Internet creates more paper and contacts to keep track of, more passwords to remember. Some think that all this complexity makes people smarter, but I don't see how that can be when it only taxes the memory; it does not require intellectual capacity or imagination.

Researchers at the University of Minnesota found that having too many choices can be mentally exhausting. They asked one group of participants to make choices of consumer products, university courses, or school materials, while the second group was asked only to "consider" their various options. The group that was forced to make choices had more difficulty later in focusing on a pre-set task. From this and other research, the study's lead author Dr. Kathleen Vohs concluded that "making too many choices seems to deplete mental resources."

If you are spending a lot of your mental energy on unnecessary details and pointless choices, there is less of it available for more substantial matters. My hunch is that all the details and demands create a low-level anxiety. What can we do about this? For starters, we can simplify our lives as much as possible. Complain (officially, to someone with authority). Watch much less television. Figure out how to get to a different economic system that doesn't depend on excessive advertising and constant growth in consumption. +++

One trend that adds to distraction is multi-tasking. The fact is that while you can do three or four things at once, none of them receives full attention—and some things deserve full attention (driving, for instance). You could see multi-tasking as a kind of down-sizing, expecting everybody to do more than one job, even if now it's only for their own supposed benefit or enjoyment. Researchers at Stanford University found that those who multitask the most are the worst at it, easier to distract and less able to tune out irrelevant information. Professor Clifford Nass said the high multi-taskers "just love more and more information [but] they couldn't ignore stuff that doesn't matter. They love stuff that doesn't matter."

Mind Becoming

There was a child went forth every day
And the first object he look'd upon, that object he became
And that object became part of him.
~Walt Whitman *Leaves of Grass*, 1855

What does it mean for youths to be immersed in a media culture that is all about zombies and blood-sucking vampires, glitterati, and cybernetic warriors fighting in space? Is this preparation for life, or is it escape from a future that looks troubled?

It's not only children who are impressionable, although it's especially true of them. Any of us must choose the mental environment that we want to become. For this reason some of us avoid horror movies, violent films, and other media creations that are vulgar without redeeming humor. A friend passed up several otherwise appealing films when she learned they showed torture, something she didn't want to be 'in her head' for days afterward. Most of us can deal better with atrocities in print than by vicariously experiencing them through graphic images. Some of us are more sensitive or empathic than others—and I do not count this as a weakness.

It's difficult, without living in the woods, to avoid the constant seductions and distractions of advertising. At its core, advertising is about making you feel dissatisfied with yourself and your

life, about achieving happiness by buying something. It takes conscious effort to say "No thanks" to all the messages. Many have learned how to do this, and teach their children how. +++

So, should we emulate those New Age individuals who avoid knowledge of unpleasant happenings and constantly accentuate the positive? No, that resembles denial and escapism. As citizens, we need to know about Abu Ghraib. Each of us must draw the line for ourselves between what is necessary knowledge and what is gratuitous wallowing in violence, conflict, and scandal, as in "If it bleeds it leads" TV news.

The other pole says that we can't change anything—we are doomed. Every new problem just makes some of us more pessimistic. Instead of these extremes, let us cultivate a problem-solving mode as large as our species. There are new directions aplenty in this book. Along with the necessary knowledge, include in your life plenty of friends, Nature, and joy.

Chapter 4
Creative Thinking

Re-imagine every single thing we do.
        ~Paul Hawken, entrepreneur and environmentalist

Creativity is something of a buzz-word among business consultants, who would put it into the service of capitalist innovation and expansion. Others promote creative impulses for the sake of individual self-actualization. My broader interest here is to encourage creative thinking in order to discover new ways to protect and advance species welfare. If, as Einstein said, we need a new way of thinking, we will have to create this new way brick by brick (or synapse by synapse).

According to author Daniel Pink, industrial nations are finally moving away from the logical, linear thinking of the Information Age (and of the scientific revolution before it) into the big-picture Conceptual Age. Although creative thinking is not yet very evident in public life, I hope Pink has, at the least, made a self-fulfilling prophecy. Pink notes that left-brain, linear skills are much easier to automate or outsource than is inventive, contextual thinking. He says "Any job that depends on routines—that can be reduced to a set of rules or broken down into a set of repeatable steps—is at risk." This gives an economic incentive for the change to creativity.

To think creatively requires a certain trust in one's self and one's own mind; an ability to reserve judgment; and a tolerance for ambiguity. One must actually enjoy coming up with new ideas or new combinations. The downfall of creative thinking is the need to find answers quickly and achieve some kind of order, whether or not it is the best possible solution. Anxiety about not making mistakes often inhibits creative thinking. Some young children are already afraid to draw a picture without looking at what some other child is drawing.

A barrier to thinking creatively is worrying too much about the 'rules.' For instance, no rule says that one must never end a sentence with a preposition. To paraphrase Winston Churchill, these are the sort of rules up with which I will not put! In trying to solve problems, we often assume that there allowable limits or boundaries outside of which we can't think ('the box"). These nonexistent limits keep us from many positive solutions.

I don't suggest one should always break the rules, which would be a kind of reverse conformity, or that one should cut corners in ethics. In emergency situations one's best bet is usually a trained professional using standard protocol. Even so, unexpected developments sometimes make it necessary for the trained professional to improvise. Rules of thumb are better than rules writ in stone since they are guidelines, not absolutes.

Mental flexibility may also suffer from the tyranny of the latest information and the current conventional wisdom. There are fashions in thinking—ideas are 'in' or 'out.' But sometimes what was said in 1927 or 1882 or 400 BC still applies and has more depth than today's blog. Many ideas that were drowned out in the past still retain their potential for solving today's problems. Professor/editor Lee Altenberg says:

> Should today's social contract ever fail on a large scale, one can expect that ideas from the margins (crazy as well as rational) will flow into the center as people become more receptive to novel solutions for the society's woes. It is therefore prudent to maintain the "germ lines" of social

thought, much as horticulturalists maintain heirloom plant varieties for the day when their genetic endowments may prove useful. +++

Digital/Analogical Modes: The human forebrain specializes in two different modes of thinking: the verbal, logical, linear abilities of the 'left brain' and the pattern-making, holistic, and emotion-linked capacities of the 'right brain.' One might describe these as the Digital and Analogical modes. Studies of split-brain patients in the 1950s led to discovery of this brain specialization. The hemispheres work together, and it takes both kinds of ability to make us fully human, but since the 17th century, with the dominance of modern science and technology, western culture has tended to favor 'left brain' functions and to down-rate the others. Pink says that in particular, U.S. society in the 20th century was dominated by "a form of thinking and an approach to life that is narrowly reductive and deeply analytical."

Pink describes the two different approaches quite graphically, noting "The left hemisphere specializes in text; the right hemisphere specializes in context." While L-directed thinking is sequential and analyzes details, R-directed thinking is simultaneous and synthesizes the big picture. Pink says "The left converges on a single answer; the right diverges into a Gestalt."

One may note the over-literalness of religious fundamentalists, ideologues in general, and people who think like bureaucrats whether or not they actually are bureaucrats. All of them self-limit themselves to L-directed thinking based only on text, details, and single answers.

We need both modes of thinking.

Creativity and Play

Life must be lived as play.

~Plato, Greek philosopher, 427-347 BC

The great 17th century mathematician and physicist Isaac Newton described his accomplishments this way: "I do not know what I may appear to the world, but to myself I seem to have been only a boy playing on the sea-shore and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me." Creativity clearly seems related to the ability to play, a trait human children share with many other mammals and birds including dogs, cats, otters, crows, porpoises, and penguins. It is reported that foxes collect toys, and have grabbed balls in play on the golf-course. Inter-species play exists not only between humans and some domestic animals, but has also been observed between other species, such as ravens and coyotes. Whether within or between species, play depends on *meta-communication*, for example the dog's play bow or the human's grin, that indicates subsequent events are in a separate category of interactions.

Animals sometimes play by themselves. For instance, my terrier will pick up an object, perhaps a piece of cardboard, toss it around and chase after it. Of course, he would like to involve me in the action. Human creativity often involves solitary play, say with paints, Legos, or a piano, and the creation of new objects, concepts, or patterns of sounds. Among adult humans, retaining the ability to play is related to a basic level of trust both in oneself and in the universe. As Emerson said, "With the exercise of self-trust, new powers shall appear."

Certain methods of child-rearing or teaching help develop self-trust in the child. For instance, 'natural parenting' adopts traditional methods such as carrying the infant next to the body, breast feeding, and trying to meet the child's basic needs at each level of development. This seems to

result in a more self-confident child. It is not the same as indulging or spoiling children, which does not allow them to develop their own resources to become independent.

We adults in the West are too prone to think of children in terms of their weaknesses rather than their strengths, to worry about their future economic competitiveness, and to try to speed up the natural timetable of their development into adulthood. We forget how much we can learn directly from children and from the child still resident within. Most fiction and films are about adults in an adult world. When present in films, children are usually props or stock characters—sentimentally innocent, bratty, or insufferably cute. There are exceptions, of course, usually a story about an older child on the cusp of puberty, a coming-of-age story. But this exclusion of children is especially foreign to the experience of people in less industrialized countries where half the population may be under age eighteen and children are expected to work for the family.

There is another destructive aspect of this lack of respect for children's abilities. It resembles the Western tendency to think of minorities, less privileged socioeconomic groups in one's own culture, and people in less developed nations as childlike. In this kind of thinking, those less favored groups and countries must grow up and be like us, so it is our duty to help and teach them, act as their missionaries and mentors. But this attitude—though it may be well-intentioned and often masquerades as liberalism—is only a diluted form of Social Darwinism.

Think about what childhood offers a world trying to become sustainable in a hurry. Children are naturals at re-purposing and re-using. A packing box becomes a playhouse. Two chairs become a train. Kids often value the container, which imagination can give countless uses, over the consumer good that arrived in it. Children are *bricoleurs*, using the French word for tinkerers who make use of whatever is around. They create all sorts of new combinations of words or things, and can easily change the direction of their play without hindrance from ideologies or the conventional wisdom. They are masters of creative thinking in a world of limited resources.

The lack of attention to children in fictional entertainment is doubly true of animals and the natural world. Most films and television dramas take place indoors or in the artificial, man-made landscape of cities. Very seldom do you see a non-human character, except for a dog, which is usually another stock character. Wild animal and tree characters are relegated to children's entertainment, where most are anthropomorphized cartoon-style. If we deal with the natural world onscreen it is through the lens of science. Again, we divide things into two separate worlds—the human world of relationships and the natural world of observation and experiment.

My argument here is that we need to see the world whole and with our whole selves if we are going to preserve it. Since fiction and visual drama are such a large part of our lives, let us ask for a more inclusive panorama, a more bio-centric perspective. Even if children, squirrels, forsythias, and pine trees are depicted in the film only as part of the passing scene, at least we will recognize that they are part of our universe. +++

Conditions for Creativity: Many books, articles, and workshops discuss how to create more creativity for business success. Charles W. Prather, former R&D professional, says that the climate for innovation can now be quantified, based on the work of Goran Ekvall and others. Prather describes nine dimensions of this innovative climate: idea time, idea support, challenge and involvement, trust and openness, playfulness and humor, absence of interpersonal conflicts, risk-taking, debates about the issues, and freedom. Measuring businesses on these parameters, Prather found they needed the most improvement in risk-taking, idea time, idea support, and trust and openness. He says that recent economic realities of reduced time and budget, and fear of personnel cutbacks [and competition from co-workers?] explain these deficiencies.

One could apply these same conditions to family, public meetings, and education. What is the climate for innovation in public school and college classes? How often is creative thinking recognized as a value in education?

One obstacle to creativity comes from defining it within a narrow range, as the arts or simply making something with one's hands. Not until recently did many recognize the role of creative thinking in science, business, human relations, or governance. Women in particular were allowed a very restricted range of creative outlets. In the early 19th century world of Jane Austen's novels, middle-class and aristocratic young women were expected to have a talent such as singing, playing the pianoforte, sketching, or fancy needlework, which made them more marriageable. But a young woman who devoted herself to sculpting massive marble statues or inventing bicycles would not do. The other side of this coin was that those creative pursuits in which women have excelled such as quilting or appliqué were long discounted as serious art.

Restrictions may be placed on children's creative efforts by those who were inhibited in their own creative development, such as overusing coloring books instead of free drawing, and expecting children's drawings to be realistic, with the sky always blue. Or adults may expect children to "stop playing" and instead accumulate facts before their own development and curiosity urge them to do this.

We may be overlooking some creative people such as dyslexics. Pink notes that dyslexics, seen as intellectually disabled in the educational world, actually have some important strengths. Finding it hard to analyze particulars, they become more adept at recognizing patterns. Pink says many millionaires and game-changers are dyslexic. Sally Shayevitz, Yale neuroscientist and dyslexia specialist, says dyslexics "are intuitive, and excel at problem-solving, seeing the big picture, and simplifying." They are systems thinkers and can think strategically into the future.

There are persistent anti-creative attitudes among even people who regard themselves as very open-minded. To the American predilections for the biggest and fastest, some would add other superlatives such as the latest, the farthest out, the most cynical, or the most radical. Ideas are often judged by their novelty value rather than their intrinsic value, and by who utters them.

The barriers may be internal—creative blocks. Sometimes people just need to get in the groove. Dr. Amantha Imber, songwriter and creativity consultant, suggests briefly warming up before a creative session much as you would warm up before a physical workout. She favors a warm-up called Fat Chance, in which small groups are issued an impossible challenge and directed to solve it in a very short time. In *The Artist's Magazine*, painters and other visual artists share ways that they switch to their right brain mode. One artist takes long walks the first thing in the morning, another sketches odd objects, and a third always has several paintings underway at once. Oil painter Charles Sovek says that when he is stumped, "I'll get out my concertina and take a shot at 'Lady of Spain.' And if that doesn't work, I take a day off and submerge myself in the movie of 'The Godfather, Parts I, II, and III.' That hasn't failed yet."

Brainstorming is a group technique designed to generate a large number of ideas to solve a problem. Wendy McElroy notes "The purpose of brainstorming is to bypass linear thought." The technique was popularized about 70 years ago by Alex Faickney Osborn. One can brainstorm alone but it is more fun to do so in a group—more ideas turn up that way. The aim is to think outside the box, finding divergent approaches and combining ideas.The first part of the process is like child's play. Instead of approaching your problem with conventional thinking, you write down every possibility, no matter how wild. In fact, the wilder, the better. Only afterwards, perhaps in a second session, will you start winnowing out the ideas using your critical faculties.

According to C. Eugene Walker, a group brainstorming session has four basic rules. First, there should be no critical judgment even of one's own ideas. Second, be as free-wheeling as possible. Third, the goal is quantity of ideas, not quality. Fourth, members of the group think of ways to combine or revise earlier ideas.

The Silicon Valley product-innovation company Ideo is very dedicated to brainstorming, and they suggest the following: The best meetings are in the morning, 3-10 people is the optimal number, and chocolate chip cookies help fuel the discussion. Also: sharply focus the problem at hand, defer judgment, allow only one conversation at a time, and make a numbered list of the ideas that come up for later reference. On the other hand, they say *don't* include the boss or experts, *don't* give everybody a turn, and *don't* get too serious about it.

The Wisdom of Crowds and Clouds

Ultimately diversity contributes not just by adding different perspectives to the group but also by making it easier for individuals to say what they really think.
~James Surowiecki, *The Wisdom of Crowds*, 2004

Collaborative creativity occurs in a wide range of fields such as theater and film production, music, business, creative writing, art, fashion design, and web-based intellectual collaborations.

The wisdom of the crowd has been well-documented over a century. It's the process of answering a question with a large group of individuals rather than one expert. Some use the jury system as an ancient example. People trust "twelve good men and true" more than one judge (the expert). Group answers are especially good when the question involves estimating quantity, ordering, spatial reasoning, and general world knowledge—when there is one correct answer to the question. Wikipedia is a triumph of the wisdom of crowds.

Brainstorming is a little different, since it is about new ideas. Internet blogs, chat rooms, and social media have opened up new levels of brainstorming. There are websites specifically designed to stimulate and capture innovative ideas—but the results still require a lot of winnowing. Sometimes a shallow form of creativity can use up people's capabilities. They are still thinking within boxes within boxes, too dependent on immediate social recognition and too impatient to spend a lot of mental energy for a protracted period for an unknown payoff. That may require a minority of one.

There will probably always be some unusual individuals with radically divergent ideas who find only a tiny audience for their ideas at first. That's what it means to "be ahead of your time" and it is still possible even in the Internet Age. It's also true that creativity always occurs in a social matrix, even for the lone genius. He or she has predecessors and a tradition to build on. His society may or may not encourage and support his particular kind of talent.

The term "think tank" has come to mean a body of experts providing research, advice, ideas, and often propaganda related to specific political or economic problems. According to Wikipedia, there are currently 4,500 such institutions across the world, but one can safely say that few of them are devoted to new and creative ways to look at the world's problems. (One exception is the Institute for the Future or IFTF.) On the other hand, in the wake of the Occupy movement there is a call for grassroots think tanks, an idea with more potential for creative solutions than the usual ideologically-based think tanks. +++

It's difficult to say how social networks, other new developments related to the Internet, and even political and economic developments will affect the expansion of creative thinking in the next five years or so.

Divergent Thinking

Environmental scientist Amory Lovins was once asked about how to think outside the box, and he replied, "There is no box."

Creative thinking makes new combinations of ideas or things, putting components together in novel ways. For instance, I like to go to junkyards to pick up odd pieces of rusty old metal that when put together in certain arrangements and yard settings may be called 'art' (although one of my neighbors could never see it as anything but junk.) Creative thinking makes collages and invents odd names for rock bands. On the other hand, divergent thinking, or sideways thinking, goes in a different direction from the well-worn ruts. One looks at a neglected aspect of the total picture, borrows a new direction from a totally unrelated field, or repurposes some concept. In one example, Cliff Hughes, Vietnam veteran, peace activist, and teacher says:

> If you respect the original intent of the writers of the Second Amendment, they couldn't have been referring to modern cartridge bullets, which were invented a century later. To observe both the Constitution and public safety, bullets should each be manufactured with a unique identifier, registered by local police, and the use of each bullet reported to the authorities, much like dangerous addictive pharmaceuticals. After all, guns don't kill people—bullets do!

Divergent thinkers march to the beat of a different drum.

Innovations use both new combinations and new directions. A reader of *E Magazine* suggests a better tower design for wind energy—wide, hollow, with slats on all sides to create a kind of tornado inside. Vents direct air into a pit under the tower, where the turbine lies. This idea needs only a working model to test it.

Convergent thinkers, who are in the majority, often feel threatened by divergent thinkers who keep coming up with novel ideas and new perspectives. The convergent thinker prefers to problem-solve by selecting between a few clear choices, whereas open-ended situations with lots of choices make him uncomfortable. Consequently, a group may ignore the ideas of the divergent thinker, call him "out of order" or "off topic" or they may elect the person secretary in order to keep her safely busy taking minutes.

It is not necessary or even advantageous to be thinking divergently all the time. There is a time to listen and be receptive, and a time to be creatively assertive. That is the yin and yang of it. One individual can—should—take both roles at different times. Yet some men act on the assumption that these roles are gender-specific, that men are the ones who always think up ideas, and the women, bless them, put them into effect—they are the hand-maidens. This typecasting may occur even in progressive groups and with men who regard themselves as pro-feminist. Some individuals assert the prerogatives of creative thinking for themselves for reasons other than gender: age, status, or simple egotism. Don't let them do it.

Why Does It Take So Long?

First, a new theory is attacked as absurd; then it is admitted to be true, but obvious and insignificant; finally it is seen to be so important that its adversaries claim that they themselves discovered it."

~William James, three stages of a theory

Any new thought must necessarily be expressed in the context of the old thought. Innovative ideas are thus limited and especially if they are met by only literal understanding. The psychologist-philosopher Erich Fromm says: "The creative thinker ….has not yet the proper words to express the creative, the new, the liberating idea. [S/he must] express the new thought in concepts and words that do not yet exist in his language."

Historically, many good ideas never see the light of day or else they take many years to become accepted. But here and now, Earth dwellers don't have the luxury of dithering and procrastinating about climate change, war, and other urgent problems. If ideas exist that could help us meet these challenges, or even get us part of the way there, people need to be learning about them, talking about them, testing or debating them, and putting them into action. This book describes several score such ideas. So what are the obstacles? First is inertia. "We've always done it this way." Second is convergent thinking—narrow frames, literalism, conformity, a habit of looking for the first answer or the quick fix. Third is the presence of vested interests. These are not necessarily corporations or other large entities—they need only be people afraid of losing their jobs, or individuals who don't want to give up any of their comforts and conveniences until absolutely forced to do so.

Of course those who command industries also command propaganda outlets. But the potential of mass media cuts both ways. We who want to evolve our humanity have the very great advantage of modern communication technologies and social networks enabling us to spread ideas quickly. This is the first time in human history that a large new paradigm and its accompanying innovative ideas could be both consciously understood and rapidly disseminated to most of the members of the species.

Chapter 5
We Need an Intellectual Infrastructure

If Reason disappears from the land,
None will suspect themselves ignorant!
                ~Saadi, Iranian sage, 1213-1291

Former President George W. Bush was sometimes described as "incurious" and as such he represented a great many Americans who have the intelligence but not the motivation to ask questions and find out about their world. Such lack of curiosity is very odd because human beings even more than cats and raccoons are basically curious creatures. This is a major reason that our species has survived and flourished. With human children, soon after they learn to talk they are asking "Why?" But *why* do so many naturally curious creatures turn into passive consumers of the conventional wisdom? One hint comes from former history teacher Barbara Fitzpatrick. Observing the child-rearing practices of some of her neighbors, she notes that many children are more severely punished for *questioning* their parents' decisions than for *disobeying* them. Those children grow up more ready to accept the status quo and the received wisdom.

For decades, politicians and others have complained about education deficits for which they blame the public schools. These experts prescribe all sorts of reforms for those schools where students perform poorly on standardized tests. The latest panacea for under par schools is to fire and replace everybody from principal to janitor. For some reason these reformers, whatever their ideological bent, do not explore the effect of television on children's learning. In *The Plug-In Drug*, Marie Winn makes a very good case that passive viewing of television as well as all the other screens (especially videos and video games) are replacing our ability to read, to think for ourselves—or to think, period. Educator Tony Wagner says "I have observed that the longer our children are in school, the less curious they become." Is that because of the nature of the school system itself or from the accumulation of passive screen time? Perhaps it is both.

But let's do more than play the psychological game "Ain't It Awful!" where we all sit around, shake our heads, and say 'tsk, tsk.' Instead, let's get proactive. Just what will we do about widespread ignorance and those reflexive, ideological responses that too often take the place of thinking? In order to maintain our own democracy and to support the hard thinking necessary to preserve the entire species, we need to build and enhance our intellectual infrastructure (in addition to public schools and formal education as presently constituted). +++

Intellectual infrastructure is at least as important as roads and highways, but in the wake of an economic crisis, many states and municipalities are cutting library funds and closing library branches. This is exactly the wrong place to cut. Libraries are not 'frills' but an essential part of forming educating citizens without whom democracy cannot work at all. This is especially true because of the recent dereliction of duty by mass media.

Media or Not

I think media should be abolished from, you know, reporting.
                ~ Joe "the Plumber" Wurzelbacher, Pajamas Media, 2009

Many people take the media as a given, a utility such as water or electricity. Instead, the public needs to understand the nature of these very vital businesses, first that they *are* businesses.

Media ownership has become extremely concentrated and monopolistic, and an industry-dominated FCC has failed to regulate the big media companies. Second, it is important to know that since 2008 most Americans get their news first from television, second the Internet, and third from newspapers. Yet about 80% of news is originally reported by newspapers, according to former *Los Angeles Times* editor John Carroll. The most basic source is the least consulted.

Third, we are losing our newspapers, from a perfect storm of factors. When television came along, fewer people read newspapers and many young people never got into the habit. Starting in the 1970s, newspaper chain ownership replaced family ownership. Owners and shareholders in the 1980s and 1990s expected newspapers to be not only profitable, but very profitable. They valued media as a product to sell like cornflakes. But by the 2000s, the newspaper business model no longer seemed to work, or at least the high-profits model didn't work. The first result was cost-cutting. The late CBS News anchor Walter Cronkite lamented in 2007 that today's journalists face challenges that his generation did not, "rounds and rounds of job cuts and cost cuts that require them to do ever more with ever less." They can no longer count on employers to provide the necessary resources to expose truths that powerful interests do not want exposed.

Newspapers in particular need sufficient staff and paid time to conduct the investigative reporting that is so essential for a well-informed citizenry. By 2005, over one-third of the 100 largest daily papers had no full-time investigative reporters. Yet Dave Gilson says a recent study of government accountability in various countries found a strong correlation between high levels of reading newspapers and lower levels of corruption.

Printing and delivery costs rose, subscriber lists dropped. Meanwhile, the Internet came along to compete with print news. The situation of newspapers worsened greatly during the 2008 economic downturn and consequent loss of advertising revenue. Many papers made drastic cuts in staff, losing more than 22,000 jobs in 2008. Major newspapers that closed down or declared bankruptcy included the *Rocky Mountain News*, the *Seattle Post Intelligencer,* and the parent company of the *Los Angeles Times* and *Chicago Tribune*. Between January and June 2009, 100 newspapers shut down.

The *Christian Science Monitor* was the first national newspaper to go completely online. In March 2009, *24/7 Wall St.* posted a list of ten more major newspapers expected either to fold or go digital by mid-2010. The site suggested a likely loss of at least eight of the 50 largest dailies. However, it is not yet clear how digital newspapers can support themselves. Journalist Walter Isaacson proposed an easy method of micropayment, so readers could pay nickels and dimes for articles or daily editions, an approach that would "also nourish citizen journalists and bloggers."

The French government offered an $800 million bailout package to its newspaper industry—which included free subscriptions for 18-year-olds—but Gilson says a similar bailout for U.S. papers would cost $12 billion or more.   Others look for a new paradigm, such as letting failing newspapers become more like public radio and television stations. Mitchell Stevens at NYU Journalism School notes that NPR "is one of the top journalistic organizations in the country." NPR, PBS news and BBC are all government-subsidized operations. BBC, funded by a hefty fee on all TV-owning UK households, is the largest news-gathering organization in the world, widely respected for its relatively neutral and in-depth coverage.

In March 2009, Sen. Benjamin Cardin of Maryland introduced the "Newspaper Revitalization Act" (S673) that would allow newspapers to become tax-exempt nonprofit organizations. One drawback to this plan is that as a 501(c) (3) organization the newspaper could not endorse candidates. Opinion columns and investigative political reporting might also be at risk. Because of these First Amendment problems, the bill has not received much support and is

stuck in the Senate Finance Committee. However, it does seem possible to devise legislation to make newspapers a special form of nonprofit organization with a limited and defined editorial and columnist area for expressing opinions, meanwhile providing safeguards for investigative journalism. Preserving investigative reporting is probably the top reason to save newspapers in the first place. Internet bloggers are not in any position to replace this function.

Even though circulation is falling, 45% of high school graduates continue to read a daily newspaper. Some maintain that the old-fashioned newspaper can still support itself if it stays locally owned and focuses on local news because that is what most newspaper readers want. But in this rush to localism, where does the citizen go to stay informed about what goes on in the nation and world, not only current events but scientific discoveries and technological changes? Gilson reports that since the 1980s, the number of papers with Washington bureaus has dropped more than half, and there is an even greater reduction in the number of newspapers and wire services that cover Congress. Almost two-thirds of newspaper executives say they've cut foreign coverage since 2006.

The fate of newspapers is intimately related to the fate of democracy, which requires an informed public. Let us work out one or more of these methods to save newspapers and the more comprehensive and in-depth information they can provide. +++

Net Neutrality: In the space of a decade the information commons known as the Internet has become indispensable to a great many people around the world, as well as to economies and governments. By one estimate, Internet users numbered 2.27 billion by 2012. That's about a third of the human race.

Since it began, the Internet has given equal treatment to all who use it, regardless of the data load. But freedom of the Internet could end from the lobbying of phone and cable company executives to set up a tiered program of paid access. Telecom proponents argue they need a new system in which companies with data-heavy content would pay extra fees—and get special treatment in transmission—to pay for telecom updates. Supporters of net neutrality fear that in this system, some traffic might not move over the net at all, that telecom companies could block or censor whatever they want.

In 2010, the FCC adopted new rules to prohibit Internet service providers (ISPs) from interfering with the free flow of information. However the international organization Reporters Without Borders says that the protections are still inadequate:

> ISPs keep the right to increase the bandwidth available to companies that need it to send bandwidth-heavy content. The blocking of "unlawful" websites and peer-to-peer transmission is still possible. And for the most part, the new rules apply only to fixed broadband, and not mobile.
> The non-profit organization Free Press has filed a legal challenge to the rules. Reporters Without Borders reiterates its opposition to any kind of filtering and blocking of content on principle and to any kind of discrimination against individuals and companies in access and use of the network. And it thinks Net Neutrality should also apply to mobile broadband connections, which are being used more and more thanks to the popularity of smartphones and tablet computers.

Proposed legislation in the U.S. Congress to protect intellectual property (SOPA or Stop Online Piracy Act) became extremely controversial by January 2012. The bill would allow copyright and intellectual property owners to demand that a site withdraw or block any online content that they considered to be violating their rights. If sites refused to comply, copyright holders could then turn to a judge to obtain enforcement." In their belief that the legislation

threatened First Amendment rights and would radically change the Internet, Wikipedia and 7,000 other websites held a 24-hour blackout. Several of the bill's sponsors then withdrew, and it seemed likely the law would be rewritten before it came up for another vote. However, the Trans-Pacific Partnership, a secretive "free trade agreement," is known to include much stronger intellectual property rights in the digital media, one of many areas in which it would do an end run around the U.S. Congress, U.S. Constitution, and international Internet community. Internet users need to stay alert.

Robert Reich notes that an important question excluded from the debate is about who should pay for extending broadband to rural and inner city areas that are not now covered. Reich says that in 2006 the GAO found that 42% of U.S households had no Internet connection, and most of the poor had no access to broadband.

Media Freedom: Reporters Without Borders is a French-based NGO which defends the freedom to be informed and to inform others throughout the world. RSF (after its French name Reporters Sans Frontières) defends journalists and media workers who are imprisoned and persecuted, fights against censorship, and works to improve the safety of journalists, especially those reporting in war zones. The organization has consultancy status at the United Nations.

RSF also publishes a yearly Press Freedom Index, ranking the world's nations in terms of media freedom. Last year (2011) was a volatile year for press freedoms especially because of the Arab Spring and efforts by various authoritarian governments to suppress information and to keep people from organizing by social networks. "Crackdown was the word of the year…. Never have acts of censorship and physical attacks on journalists seemed so numerous."

Of 179 nations, the United States fell 27 places to 47th in a tie with Romania and Argentina. A major reason for this year's relatively poor showing was multiple instances in which journalists were arrested and obstructed during eviction of Occupy Wall Street camps. Another was the U.S. government's drastic reactions to the WikiLeaks release of diplomatic cables, for instance forbidding government employees from accessing classified documents available on WikiLeaks and hounding WikiLeak advocates. The treatment of Army Private Bradley Manning, accused of giving classified documents to WikiLeaks, was called "cruel and inhumane" by some observers (for instance his almost complete isolation in a small cell without access to news media, light kept on all night, etc.). The UN Special Rapporteur on Torture, Juan Mendez, was refused a confidential meeting with Manning.

In another instance, on February 1, 2012, House Republicans directed Capitol Hill police to detain a documentary crew as they attempted to film a hearing on a controversial natural gas procurement practice. Josh Fox, director of the Academy Award-nominated documentary "Gasland" and his crew were taken into custody. Republicans also denied entrance to an ABC News team attempting to film the event, although the hearing is open to the public.

On the other hand, RSF commended the United States for having developed tools to support online free expression with a "Shadow Internet" and parallel mobile phone systems that dissidents in other countries can use to escape authoritarian censorship.

Fifteen years ago the Emir of Qatar, Sheikh Hamid bin Khalifa, founded the Al Jazeera television Network to be an independent source of information in the Arab world. It has since expanded to several other regions. The network was praised by the Index on Censorship for circumventing censorship and contributing to the free exchange of information in the Arab world. Al Jazeera is widely believed to have had a large role in sparking the Arab Spring.

Media Literacy

It is the emergence of mass media which makes possible the use of propaganda techniques on a societal scale.

~Jacques Ellul, social philosopher, 1912-1994

Americans need toknow how to protect themselves from junk information on television, talk radio, and the Internet. Meanwhile they can support alternative media. Unfortunately, many adults in the United States do not know the difference between a book and a magazine, an editorial and a news article, or a credible source and a rumor. Some tend to believe anything in print, if they agree with it. These many misconceptions should have been overcome in elementary school. If schools and adult education courses taught media literacy, more citizens could tell the difference between news and opinion. +++

The organization Fairness and Accuracy in Reporting (FAIR) gives some guidelines for how to detect bias in news media. First, note the range of sources and count the number of corporate and government sources compared to progressive, public interest, or minority voices. Look for diversity. In a three-year study in the early 2000s, FAIR found that Nightline's U.S. guests were 92% white and 89% male, while the PBS News Hour's guest list was 90% white and 87% male. Another consideration is the framing of issues and whether the language is loaded. For instance, FAIR points out that a 1992 poll found that 70% favored "affirmative action" while only 46% supported "racial preference programs."

Since media forms such an important part of our lives we need to keep some things in mind:

Media is not reality, or as Meyer says, "Media equals deceptive life." This is true of both printed and broadcast news and documentaries. *Mediated experience is not the same as direct experience.*

Running a democracy, and keeping it, absolutely depends on an informed electorate. A person who doesn't even try to keep up with what is happening hardly deserves the name of citizen.

Mainstream media are big businesses with the outlook of big business, so they can hardly be neutral. By growing bigger and less competitive they acquire ever more power to shape the news. The MSM leaves out a lot of important stuff. We get our information filtered through a plastic curtain.

Corporate media supply a limited range of news, but one can use a variety of news sources. For a rounder picture, mix types, perspectives, and geographical areas. Along with a daily newspaper and perhaps a weekly news magazine, one can watch PBS News, listen to NPR, access foreign newspapers and wire services online, or use shortwave radio to find out what they are saying in other countries. In other words, you yourself can supply some of the competition that is otherwise missing.

It would be wise to watch less TV and watch it with more discrimination. The problem is not only the content but also the physical nature of television-viewing which gives it an almost hypnotic effect. TV can spread emotional contagion before critical thinking can get off and running.

What Bias?

Modern American political sentiment is wholly pliable, almost entirely manufactured by coordinated attack.

~John Brummett, political columnist, *Northwest Arkansas Times*, December 20, 2009

Writing about political maneuvers surrounding the 2009 healthcare reform bill, Sue Wilson noted that seven Democratic Senators calling themselves Blue Dogs—who were derailing the bill—came from seven states in which talk radio was almost totally dominated by conservative talk shows. She says according to Pew research, 22% of the public get their news from talk radio. In the seven Blue Dog states of Arkansas, Georgia, Indiana, Louisiana, Ohio, Tennessee, and Utah, there were only three progressive radio stations, along with hundreds of conservative ones. Wilson says, "Former Republican Senator Trent Lott had it right when he said conservative talk-radio is running the country." Yet millions of people are equally convinced that 'the media' is biased toward liberalism.

The Fairness Doctrine law was in effect for many years until ended by the Reagan Administration. One excuse for dropping it was that since new technology such as cable and the Internet did not use the electromagnetic commons, the Fairness Doctrine imposed a double standard putting networks at a disadvantage. Contrary to common belief, the law did not require *equal* time for differing views, only time for multiple perspectives. In Europe it is common for laws to require news broadcasters to present a range of viewpoints. But the more libertarian view supporting free speech is prevalent in the United States, including among many liberals. Conservatives have succeeded in framing fairness as a form of censorship.

Advertising and PR

From its modest beginnings, advertising has grown into a one trillion dollar a year worldwide industry and the single biggest psychological experiment ever carried out on the human race.

~*Adbusters,* Jan/Feb 2011

Modern advertising is barely a century old, yet it has a mighty grip on us. The situation could still seem comic in 1953, in the classic science-fiction novel *The Space Merchants* (by Frederick Pohl and C.M. Kornbluth). In this story of a resource-scarce near-future, ad agencies pretty much run society, using scientific advertising techniques to convince people to accept their substandard lives and to devote themselves to consumption. Even top admen have sold themselves on their own spin. The story's main plot concerns an advertising campaign to sell the public on settling Venus, a planet with formaldehyde in its atmosphere and temperatures that range around 900 degrees Fahrenheit.

Advertising and PR don't quite run society today, but they do have enormous influence on what we think. PR often masquerades as news and may be as much as 40% of what we read in our newspapers. Advertising is also a large part of the distractions that confuse and exhaust us. While ads of the descriptive sort found in the old Sears and Wards mail order catalogs are helpful, advertising has long since developed into a hidden persuader that creates needs and wants far beyond what we can afford and what the planet can afford. This is the aspect of advertising that most threatens human survival, as its whole point is to increase our consumption just when we desperately need to reduce it.

In the USA, advertising is counted a business expense that companies can deduct fully for tax purposes. I asked a friend with background in accounting 'what if' businesses could deduct only a portion of advertising expenses and he replied that this would drive the final stake through the heart of newspapers, whose revenue depends so heavily on advertising. Network television would suffer for the same reason. Whether or not this particular plan is viable, we need to find

ways to reduce the immense power and distracting presence of advertising in our lives, as well as its contribution to unsustainable consuming. At least as individuals we can break its hold on us by avoiding it and teaching our children how to see through it.

Literacy

Educate and inform the whole mass of the people. They are the only sure reliance for the preservation of our liberty.
~Thomas Jefferson, 3rd President of the United States

It is difficult to say with certainty just how many of us are literate, because of the different ways to define literacy. Some governments consider adults literate if they recognize several thousand words learned in the early grades of school. By other measures, individuals might be considered functionally illiterate if they cannot read common written information such as medicine labels or other printed instructions. The CIA *World Factbook* states that Americans are 99% literate, based on Census data, but other estimates suggest only about 60% are functionally literate. The UN ranks the United States 49th in literacy among 156 member nations.

A five-year U.S. government study found that 21 to 23% of U.S. adults could not locate information in what they read or make inferences about it. The same study found that the lowest literacy group, 40 to 44 million people, earned an average income less than a third of the poverty level threshold. The next group up the scale (second literacy level) comprised 50 million adults who earned a yearly average income about 70% of the poverty threshold. Are they poor because they are less than fully literate, or do they lack literacy skills because they are poor? Or are other factors of ethnicity and economics involved in this situation? It appears from this study that at least 40% of the U.S. population is either illiterate or functionally illiterate.

Among American states, Texas, Georgia, Louisiana, Mississippi, and Hawaii have the most people with "low literacy," ranging from 16 to 19% of the population in 2003, according to U.S. government statistics based on the NAAL test. In some cases there are language barriers. In the 1990s, the United States, Canada, and the United Kingdom used a similar test, the IALS, to determine the need for literacy provisions in their respective countries. Numbers of adults in Literacy Level 1 ranged from about 16% (Canada) through almost 22% (UK). There was controversy about whether these numbers under- or overestimated the degree of the problem.

The idea "Each One Teach One" first arose among black slaves in the United States, whose owners discouraged their learning how to read. Nevertheless, many slaves who gained the skill secretly passed it on to others. Later the Christian missionary Dr. Frank Laubach adopted the concept in order to advance literacy in the Philippines and many other countries. A number of nations have invested major social resources into bringing literacy to their people, especially those living in the countryside. The Cuban Literacy Campaign in 1961 mobilized 268,420 volunteers, including about 100,000 youths who taught classes in rural areas. In one year the project reduced illiteracy from an estimated 23% (42% in rural areas) down to four percent. The Nicaraguans conducted a massive literacy campaign about the same time. More recently Venezuela taught a million and a half to read over a two-year period. Cuba won a UNESCO award in 2006 for transferring their methods of teaching literacy to 15 other countries. +++

A board game called *ABCDEspanol*, invented by a Colombian teacher, Javier Gonzalez Quintero, can teach reading and writing in Spanish to both children and adults in about 120 hours of play. Reportedly over one million have learned Spanish literacy through this game, which can

also be used to teach basic Spanish to speakers of other languages. A similar board game for teaching English literacy is in the works. +++

In some countries illiteracy results from poverty and lack of public schooling but in English-speaking countries it may have more to do with the language itself. Bob Cleckler in his 2005 book *Let's End Our Literacy Crisis* claims the major reason English is so hard to learn is that its spelling is extremely irregular. English is a hybrid of *eight* separate languages: Celtic, Norse, Icelandic, Latin, Anglo-Saxon, German, Danish, and Norman French. Also, Cleckler says that Samuel Johnson made a serious mistake in his famous 1755 dictionary because he froze the spelling of words rather than the spelling of sounds (phonemes). As pronunciation changes over time, so spelling became ever more detached from sounds.

There are at least 1,768 different ways to spell about 40 basic sounds in English, and the American Literacy Council says 80% of words in an English language dictionary do not indicate how they should be pronounced. Children who learn most other alphabetic languages can pronounce any word in their language after three or four months, but it takes years for children learning English. In view of this it is surprising that so many people in the United States and UK are convinced that phonics is the key to learning to read. Cleckler says both phonics and 'look-say' are inadequate. As for teaching adults, Cleckler says it takes at least two years of reading instruction for a U.S. adult to become functionally literate while those learning most other alphabetic languages can learn to read in about three months.

Cleckler's new spelling system is based on our current alphabet, always using the same letters or combination of letters to represent each sound. Every English sound or phoneme—he says there are 38 phonemes—has only one spelling. For example, Cleckler always uses *AU*, *OO*, *OI*, and *OU* for the vowel sounds found in *haul*, *good*, *oil*, and *out*, and *TH* and *TT* for the sounds in *then* and *thin*. There are no silent letters. He says anyone who can already read English can learn this system in five minutes.

Why is it so hard to adopt such ideas? Many have promoted English spelling reform. The great dramatist George Bernard Shaw put his own resources into it a century ago, without success. But Cleckler says that spelling reform did almost come into use in England in 1949 and again in 1952. Let's try it once more, if one of the English-speaking countries will lead the way. We could at least test the Cleckler system in a pilot program. +++

The reading situation has worsened in the United States in part because of all the electronic distractions. However, we could put them to some use, improving adult literacy through the medium of television or video—a sort of Sesame Street for grownups. PSAs consisting of thirty- or sixty-second skits could regularly introduce new vocabulary words. Basic learning might be combined with social networking for added motivation. Clearly, techniques exist to teach virtually everyone how to read and write and do simple arithmetic. So why is it not happening? One would expect improving adult literacy to be a major priority of governments and the general public in democratic countries such as the United States and UK.

College Alternatives

I spent three days a week for 10 years educating myself in the public library, and it's better than college. People should educate themselves—you can get a complete education for no money. At the end of 10 years, I had read every book in the library and I'd written a thousand stories.
~Ray Bradbury, American fiction writer, 1920-2012

College education even at state universities is getting more and more expensive, so that many college graduates are saddled with large debts for years afterward. College graduation and higher degrees are widely regarded as status symbols, providing certification for a range of better-paying jobs. Many upper-middle-class parents go to ridiculous lengths to make sure that their children will be accepted into a prestigious college, and high school students in these families are forced into a careerist and competitive role that limits their development as full human beings. In all this competitive frenzy some things are forgotten.

First, some countries manage to provide free or very low-cost university education for their citizens. Among these are Norway, Sweden, Finland, and Greece, although in some cases education is not tuition-free for students coming from outside their own country or outside the EU. Also, students are responsible for their own living expenses. In the United States, veterans and sometimes serving military members can receive such education. The Navy has a Program for Afloat College Education in which sailors on sea-duty can take academic courses tuition-free.

Second, a university education traditionally holds many benefits for the individual apart from status or job certification. It is expected to expose people at least once in their lives to the full range of human learning and accomplishment, and to improve their reasoning skills. By tying the whole college experience to occupational opportunities and social status we narrow its value almost as much as by tying it to spectator sports, fraternities/sororities, and drinking parties.

Third, it is possible to educate oneself without going to college, and many famous people have done so. The Teaching Company sells audiotape or videotape copies of lectures by top university professors, and these are frequently on sale. Besides self-directed reading, a number of free university courses are available online from well-known universities such as Tufts, MIT, and Stanford. Digital expert Don Tapscott mentions the sites iTunes University, Academic Earth and OpenCourseWare. Besides these more traditional routes, some quirkier educational websites are springing up, such as the School of Everything or Temporary School of Thought. We may need to rethink the whole idea of a university education and especially the notion that it is the one and only path to getting a good-paying job. +++

Adult Self-Education

As to the learning that any person gains from school education, it serves only, like a small capital, to put him in the way of beginning learning for himself afterwards.
~Thomas Paine, *Age of Reason,* 1794-1795

In the past, a number of less formal institutions have helped people to educate themselves about the important issues of the day. Among these are broadsides and pamphlets—important in Colonial times and since—Circuit Chautauqua, free universities, Danish folk schools, Little Blue Books, and cheap paper backs. Book discussion groups, public lectures, and small periodicals continue to be popular, along with those popular coffee shops and small cafés here and abroad in which people congregate for the purpose of finding somebody to talk or argue with.

The old Circuit Chautauqua might inspire a general audience film series today that depicts a particular historical era, adding historical awareness while entertaining people. The Napoleonic Wars and Regency period is particularly rich in well-made films, for instance "Master and Commander," films based on Jane Austen novels, the Sharpe series, "Goya's Ghosts," "Horatio Hornblower," and others. The aim would be not to convey all the textbook facts but to give

viewers a sense of the period and the social issues that moved its people, along with a feel for history itself. At the same time, skilled teachers or guides could promote critical viewing and put the period in context. A nearby community college is offering a "History by Hollywood" course. The instructor says "I want students to come away with a passion for history." He also says they will learn how to debunk historical myths. +++

Many U.S. school systems offer adult education programs but unfortunately they tend to be limited to courses such as basic computer use or other practical skills rather than discussion of substantive issues that might raise controversy. Meanwhile, small periodicals are in trouble because of rising postal rates. As for inexpensive reading matter, the Little Blue Books were a nickel apiece—actually they were often long essays or selected chapters rather than complete books—and the first paperback books cost only a quarter. Over the course of 70 years the cost of paperbacks has grown by 50 to 100 times, pricing new books out of reach for many.

This inflation of the cost of book production makes the public library more important than ever, so it is especially disturbing to read that because of the current economic downturn, cities such as Philadelphia and San Diego are closing some of their libraries. Even by 2007, some counties and municipalities with budget problems outsourced their libraries to private companies, notably to LSSI, the largest library service company. This often resulted in a smaller staff and fewer hours open. Besides accusations of union-busting, some critics were concerned because a private company was in charge of buying books, potentially controlling the flow of information.

The Internet has introduced a whole new range of resources for self-education besides the online university courses listed above. It is like a library of libraries. The philosophy of openness and sharing the intellectual wealth motivates the free culture movement, which extended the ideals of the free software movment to all kinds of cultural and creative works. The founder of Wikipedia, Jimmy Wales, expressed his vision: "Imagine a world in which every single person on the planet has free access to the sum of all human knowledge."

Public libraries often provide classes in using the Internet. Yet many people obviously need more skills in order to use search engines for research or even to evaluate the sources they find online. A great many of us look for information that fits in with what we already believe. Studies show that significant numbers, as many as one-fourth of us, do not recognize their own biases. I am not sure how to reach people who totally identify their egos with their opinions, but more adult education and more public discussions can only help.

Teach-ins are extended meetings or forums, usually held on a college campus, for lectures and open discussions on an important, controversial issue. Unlike a seminar, the teach-in isn't limited to a specific time frame or an academic overview; it is more participatory and action-oriented. The teach-in includes both lectures by experts and discussion by the audience.

A widespread teach-in movement occurred during the 1960s over U.S. involvement in Vietnam. The idea has been revived and sometimes includes digital participation. There was a National Teach-in on Global Warming Solutions in February 2009, and The '2010 Imperative: A Global Emergency Teach-in' was held at the New York Academy of Science, intended to increase ecological literacy in the architectural industry and to mobilize architects to stabilize carbon emissions in the building sector. The event reached a quarter million people from 47 different countries with an interactive webcast.

In 2011, Occupy Wall Street began using teach-ins to educate people to the inherent problems in the current form of capitalism in the United States and elsewhere.

Teach-ins could be used more widely, on and off college campuses, with and without digital participation, concerning all of the urgent issues that face the human race. +++

Open Source

> *The future is open source everything.*
> ~Linus Torvalds*, Finnish-American initiator of Open Source Linux*

Open source is a concept of free sharing of technical information. People have freely shared tech for thousands of years, starting with how to make a stone ax or how to prepare cassava root so it is edible. Technical sharing entered a more complex phase with computers, their artificial languages, and their countless commercial applications. The term has been mainly applied to software source code, which can be developed through community cooperation and made available to the public. The Open Source Initiative describes it as "a development method for software that harnesses the power of distributed peer review and transparency of process. The promise of open source is better quality, higher reliability, more flexibility, lower cost, and an end to predatory vendor lock-in." There are populist and anti-corporation overtones, and the idea of human knowledge as a commons.

Advocates of open source in one field tend to support its expansion into other fields. The open source idea has expanded to other fields such as biotechnology, health research, and appropriate technology. One useful application is the Eco-Patent Commons. So far over 100 patents have been gifted into the Commons, such as a self-contained battery recycling station and environmentally superior refrigerants. The GreenXchange has a similar mission but firms that contribute patents do restrict licensing and may charge an annual fee.

Fans of open source want to further the free dissemination of all knowledge across the globe and they strongly defend freedom of thought. While I generally support this philosophy of bringing science to the people, there are a few caveats. Is the philosophy really anti-corporation or just about seeding new, smaller corporations? Will the adaptable mammal insectivores displace the dinosaurs and then turn into mammoths themselves?

A movement so heavily weighted toward technological innovation still seems unbalanced toward scientism, libertarianism, and the idea that 'Anything that can be done should be done." There are concerns for overall species security when junior high kids or mentally unbalanced individuals become able to splice genes or split atoms. For example, in August 2011 a Swedish man was arrested for possession of the radioactive elements radium, americium, and uranium—which he said he had bought online from a German firm. For about six months he had been trying to split atoms in his kitchen.

As for do-it-yourself biotech, quite a few scientists are enthusiastic about the trend, for instance physicist Rob Carlson who said in 2005 "The era of garage biology is upon us." Carlson then set up his own garage lab. There are now thousands of "biohackers" across the globe, and organizations to support them. The eminent physicist Freeman Dyson in *A Many Colored Glass* (2007) predicts that "domesticated biotechnology…will give us an explosion of diversity of new living creatures rather than the monoculture crops that the big corporations prefer." [But will the new man-made diversity then displace the old natural diversity?]

Dyson also raised five questions about DIY biotech: Can it be stopped? Should it be stopped? If stopping is either impossible or undesirable, what are the appropriate limits for

society to impose? How should the limits be decided? How should limits be enforced, nationally and internationally? These are good questions, which Dyson doesn't pretend to answer.

We should all be trying to answer them. +++

Deliberative Polling^R: The problem with conventional polls is that they capture the views of people who know little more about the issues than sound-bites and headlines. Professor James S. Fishkin, Director of the Center for Deliberative Democracy at Stanford, notes that the public is subject to what social scientists call *rational ignorance.* A busy citizen asks why he or she should become knowledgeable about some issue when the individual's opinion or vote makes little difference in the end. But Deliberative Polling^R tries to use public opinion research in a new, more helpful way:

> A random, representative sample is first polled on the targeted issues. Members of the sample are invited to gather at a single place for a weekend in order to discuss the issues [using] balanced briefing materials [and engaging] in dialogue with competing experts and political leaders based on questions they develop in small group discussions with trained moderators. Parts of the weekend events are broadcast on television. After the deliberations, the sample is again asked the original questions. *The resulting changes in opinion represent the conclusions the public would reach, if people had opportunity to become more informed and more engaged by the issues.* +++

Deliberative Polling^R is based on a practice in Ancient Athens, where about 500 citizens were chosen by lot to serve on the Council, other legislative commissions, and citizens' juries. The process has been used in the United States, UK, Denmark, and Australia to discuss important, controversial issues for example, changes to the Australian constitution, whether Danes should adopt the Euro, British views on crime or the monarchy, and regional economic cooperation and revenue sharing among 15 towns in the region of New Haven, Connecticut. In the United States national issues events were held in 1996 and 2003, and eight Texas public utilities conducted Deliberative Polls^R in their service regions concerning their policies.

The number of people in a Deliberative Polling^R process is usually between 200 and 600, and it is important that they are representative of a diverse society. According to People and Participation, a UK site, the process requires television to bring about the necessary public awareness, and is usually set up with the cooperation of a television network or channel. A major drawback is that it is expensive to bring a large number of people together for deliberations. Some experiments have put part of the process on-line to save this expense. Professor Fishkin has proposed "an online Deliberative Council—a representative microcosm of the world Internet community that would actively and meaningfully serve as the ICANN membership for a period of one year." ICANN is the Internet Corporation for Assigned Names and Numbers, set up to be the technical caretaker for the Internet but inevitably moving into controversial policy issues.

Public Discussions: **A** number of new forms of discussion are developing, some of which we'll discuss later in connection with participatory democracy. Open Space Technology, sometimes just called 'Open Space,' is a meeting framework for any number of people (up to 2,000 or more) to form discussions around a central theme. It is an unusually flexible process, driven by its participants. Open Space was started up in the 1980s by an organizational consultant, Harrison Owen, after he realized that people attending conferences showed more energy and creativity during the coffee breaks than in the formal sessions.

Open Space participants pick issues for which they agree to run a session, and sign up for the ones in which they want to take part. The event usually lasts between one and five days. Fundamental principles for Open Space are: "Whoever comes are the right people; whenever it starts is the right time; when it's over it's over; and whatever happens is the only thing that could happen." The "Law of Two Feet" is that if someone is not learning or contributing, that person has a responsibility to go to a different session or take a break. Open Space has become a global community with several resource sites such as Open Space World. +++

An organization in Portland, Oregon—Northwest Earth Institute—for fifteen years has conducted self-facilitated discussion groups on topics such as voluntary simplicity, choices for sustainable living, globalization, and global warming. National Issues Forum (NIF) is a network of organizations and individuals committed to increasing public dialogue and deliberation in the United States. NIF includes thousands of groups such as civic clubs, religious organizations, libraries, and schools. Forums are organized locally but use non-partisan booklets produced by the Kettering Foundation (among other sources). Kettering's issue books describe the pros and cons of alternative policy choices, and are also published in Spanish editions and abridged editions for new readers.

These are all excellent models, but can they reach enough people fast enough to compete with the distractions and distortions of mass media? People who participate in these organized events seem to be somewhat better educated and have more experience with moderated discussions than those who do not. Meanwhile, some Americans do not seem to understand discussion at all. In August 2009, various members of Congress scheduled Town Halls about proposed health care reforms. They were frequently interrupted by angry and disruptive people who shouted down opposing views. The hostile incidents were of course encouraged by others behind the scenes. Editorials and letters in our conservative statewide newspaper defended such tactics as protected First Amendment speech but seemed oblivious to the need for real public discussion or accepted rules of polite discourse.

Right-wing disruption continues, often based on conspiracy theories about the sustainability plans of local governments. For instance, in Virginia a plan to help restore the Chesapeake Bay oyster population on county land was shouted down and tabled. Later confrontations grew so heated that some planners posted uniformed police officers at meetings. In one county, planners were forced to delay a meeting for an hour while opponents read portions of Agenda 21, a UN action plan related to sustainable development, adopted at an international conference in Rio in 1992. Agenda 21 is not a treaty and its action plan is voluntary.

It's clear that people in the United States need a lot more modeling and practice in the art of civil discussion, they need it from elementary school onward, and they need it now. In one example of the potential, Occupy Wall Street protests beginning in fall 2011 introduced a collective decision-making process using non-binding consensus that quickly spread to a large number of Occupy groups. Websites, social networks, and individuals interacting between groups taught the technique according to 'each one teach one.' +++

The Anti-Intellectual Infrastructure

I have always strenuously supported the right of every man to his own opinion, however different that opinion might be to mine. He who denies another this right makes a slave of himself to his present opinion, because he precludes himself the right of changing it.
~Thomas Paine*, The Age of Reason*

While accentuating the positive, it would be naïve to ignore the anti-intellectualism so strongly entrenched in American culture. One major strand of it goes back to colonial settlement patterns. As described in previous books, Borderers were by far the largest group of immigrants to the American colonies in the 18th century. They were a somewhat tribal people who set the tone for much of what has happened since. It is a misnomer to call them 'Scots-Irish' as many came from Northern England and others directly from lowland Scotland without going first to Ulster. Noted historian David Hackett Fischer introduced the term 'Borderers' in *Albion's Seed,* a study of the four main streams of English immigration that settled the American colonies..

Colin Woodard has expanded on Fischer's work, showing that the United States has eleven cultural regions first settled by people from several different nations, not only England. These regions maintained their distinct cultural traits even through later immigrations. He calls one group "Borderlanders," naming the region of their primary influence—the Upper South and southern portions of Midwest states such as Missouri, Illinois, Indiana, Ohio, and Pennsylvania—as "Greater Appalachia." Woodard's book, *American Nations: A History of the Eleven Rival Regional Cultures of North America,* gives new insights into American history.

Borderers were generally quite poor and less literate than residents of other parts of England and Scotland. Having suffered through centuries of wars fought back and forth across the Borderlands, they developed their own warrior culture, which they carried across the ocean to a new continent. Other early settlers of the American South and West tended to borrow customs from this group which had learned to survive under harsh conditions. I use the term neo-Borderers for those of whatever ethnicity who retain many of these earlier attitudes and customs.

Under the influence of political entrepreneurs with slaveowner values, a neo-Borderer ideology persists and has had a great deal to do with American exceptionalism. Borderers, their descendants and imitators fought the Indians, defended slavery and slave-owning states, opposed new immigrants for over 150 years (starting with opposition to the Catholic Irish), supported military and imperialist actions (often promoted by Deep South interests to expand slavery), and voted for candidates who were seemingly strong and warrior-like. Shrewd propagandists know which ancient buttons to push, such as neo-Borderer dislike of other cultures and religions, combativeness, pride of opinion despite ignorance of the issue, absolutism, and militarism. A fondness for zero-sum contests translates to either/or, black-and-white framing of issues.

A habit of thinking emotionally, especially to build up outrage and self-righteousness, makes neo-Borderers very susceptible to manipulation. They tend to be swayed by style over substance, words rather than actions. Today they are often manipulated by political propagandists, demagogues, politicians, and self-serving religious leaders. One can watch or listen to many such leaders and perceive their insincerity or hunger for power. Neo-borderers seem oblivious to these signals. In fact they often model their intellectual life upon such people.

Manipulators whose style involves making bald assertions without evidence, insulting others, blaming scapegoats, shouting down disagreement (if they allow any) and other degraded forms of discourse appear to be a more attractive model than anything people learned in years of public school. Perhaps critical thinking and learning how to have a civil discussion were not even taught—not considered as important in school as spelling and compound interest.

Neo-Borderer thinking has more to do with narrative than analysis. People respond to the story which becomes a mythology. They learned economics from the Horatio Alger stories of Grandpa's time and later from the novels of Ayn Rand. Theology comes from The Left Behind series, and science from the scientific thrillers of the late Michael Crichton. A leaning towards

conspiracy theories is explained by the fact that these too are *stories,* with simple good vs. evil plots and comic-book characters who are total villains.

Despite an interest in stories, many adults seem to lack the ability to work with metaphors and analogies, basic tools of thinking. One can see the misunderstandings in letters to the editor. Teaching here in neo-Borderland, I once asked several college freshman English classes to write original poems using metaphors—after several weeks of studying poetry—but only one or two students actually included any metaphors in their poems. It seemed an alien concept. This excessive literalism may be related to certain theological doctrines, but which caused the other?

Talk radio has certainly contributed to a degredation of discourse in the United States as many individuals mimic the highly opinionated and combative style of Rush Limbaugh and similar commentators. Limbaugh's show is carried by nearly 600 U.S. stations thanks to Clear Channel, the largest radio conglomerate on the planet. Many men in particular seem attracted to the style of argument by mutual exchange of insults, or just a one-sided rant—no exchange at all.

Not only are neo-Borderers susceptible to propaganda by repetition but many support their own arguments simply by repeating borrowed sound-bites. One sees in letters to the editor that aside from everyday practicalities, neo-Borderers are less interested in facts than in symbols, slogans, or refrains. They look for banners to fight under. They tend to mistake their own customs and preferences for eternal verities. This is a group of myth-makers and warriors, not logicians, and they have a very high tolerance for contradictions and inconsistencies. Neo-Borderers often believe the most outrageous and illogical rumors and conspiracy theories, and forward them online endlessly.

Many of us don't appear to have learned critical thinking skills during 12 years of public education, so we must find some other way to propagate CT, such as multiple models of simple arguments whose assertions are backed by evidence and examples. Put them on billboards; parse them like sentences in school. Illustrate them on TV or over the radio as PSA skits. Other PSA skits could illustrate common fallacious arguments (without partisan content of course).   +++

Neo-Borderers believe very strongly in individualism and personal liberty. This has both positive and negative effects. Monbiot speaks of "A new movement most visible in North America and Australia [that] demands to trample on the lives of others as if this were a human right. It will not be constrained by taxes, gun laws, regulations, health and safety, especially environmental restraints." Recent manifestations of neo-Borderism/libertarianism glorify acting like a selfish child. People have been media-manipulated into the Neolithic illusion that there are no limits and no consequences to living beyond our means. They still live in the Old Wild West.

Political analyst Anatol Lieven notes that "fundamentalist religiosity has become an integral part of the radicalization of the right in the United States and of the tendency to demonize political opponents as traitors and enemies of God and America." The Italian scholar Emilio Gentile described "political religion" as "an instrument of political combat within a nation." Mutating forms of Calvinist religion may express the underlying tribal/feudal culture and old issues of race and class that were never resolved.

Neo-Bordererism actively resists or gives only lip-service to the liberal Enlightenment values that inspired the American Revolution. Core ideals of the Enlightenment include human autonomy, the importance of reason, the existence of a universal human nature with the capacity for enlightenment, belief in continual progress in the human condition, the separation of religion and politics, and the ideal of popular government. Various movements in modern evangelical Protestantism or in American conservatism (increasingly the same thing) actively oppose most of these Enlightenment principles.

On the other hand, Liberalism has hardly lived up to its own Enlightenment values. It has failed to stop a century of wars, genocides, environmental destruction, and out-of-control technology. Liberal belief in continual progress is closely related to many current problems such as overconsumption and overoptimism. There is also no denying that the United States government is dysfunctional, and that there is great and growing economic inequality in America, conditions which developed under governments both conservative and liberal.

Some long-entrenched neo-Borderer patterns, stimulated by political actors, are clearly dangerous to American democracy and therefore to the world and humanity. Neo-Borderers *must* be brought into the American discussion, empowered as individuals, and offered new ways to express their often justifiable discontent with economic and political conditions. They need greater access to higher education such as afforded by the new GI Bill or to other kinds of online education and self-education, especially if this is not simply vocational but includes history and other liberal arts. Affirmative action should take account of class and economic disadvantages as well as racial and gender discrimination. The United States could revive the Civilian Conservation Corps, which provided work and completed many socially and environmentally beneficial projects. The CCC also taught many illiterate men to read and write, to learn some basic skills, to gain self-respect, to rub elbows with those of other backgrounds, and to become invested in improving the natural base for human existence. +++

Liberals gain little by insulting or discounting communities that oppose modern trends however inchoately. After all, many modern trends need opposing. Ideologies that simply react to fundamentalism, such as militant atheism, may sidestep human values or deny the depth of the religious impulse within the human psyche.

It would help for Americans in general to become more aware of their own cultural history and especially those of us, like myself, with Borderer ancestors. *Albion's Seed* and *American Nations* are must-reads for college freshmen. We need to overcome the common notion that the early English settlers were the norm to which all later settlers must adapt. There was more than one cultural stream even among those early English settlers, and if later Italians and Irish were 'ethnic', so were the Borderers. +++

As for politicians and propagandists who pander to and manipulate neo-Borderers, one can only keep pointing out what they are doing. In *Democracy Heading South*, Augustus Cochran described how national political institutions "are coming increasingly to resemble the irrational and undemocratic politics of the old Solid South."

A second strand of anti-intellectualism derives from the American public school system, which churns out a great many functional illiterates. Many graduates disliked or ignored school except for sports and their social networks, and they never pick up a book again. One problem especially for patriarchal neo-Borderers is that school is identified as a female institution. In the place of economic class consciousness, many retain their childhood resentment of the good students whom they identify with intellectuals or 'the elite.' Thus we see almost visceral dislike for Al Gore, a symbolic teacher's pet. Adopting Cleckler's cure for illiteracy might prevent much of the competitiveness and resentment present in American schools. This plan wouldn't require special reading groups or allow children to go through grade after grade without becoming literate. Another help would be more male teachers, especially in elementary schools. +++

One more strand in U.S. anti-intellectualism is the media's Plastic Curtain which prevents us from learning about how other nations are solving problems similar to our own, or how they are working on species problems. For instance, as context to the health care reform debate in 2009,

U.S. citizens should have expected in-depth and unbiased analysis of how health care actually works elsewhere, including surveys of the people who live in those countries. A *Frontline* TV program "Sick around the World" did carefully describe the health care system in five other advanced nations with capitalist systems—UK, Japan, Germany, Taiwan, and Switzerland—but PBS is not quite mainstream media, and such information needs wider dissemination. In many areas, Americans are much less knowledgeable about what is going on in the rest of the world than they assume. This makes it easier for them to dismiss the other 95% of humanity as nulls.

Civic Literacy: Several literacies vitally important for humanity's transformations include scientific literacy, eco-literacy, and historical literacy. Civic literacy is also necessary in order to maintain a free society, yet U.S. knowledge about how government works seems to be at a new low. The National Constitution Center conducts an annual survey which recently found that 41% of respondents did not know that there were three branches of government and one-third could not name even one branch. At this rate most of us could not pass the test required for new citizens. Such widespread ignorance allowed the Bush administration to claim unprecedented constitutional powers without major public protests. Eric Lane in the journal *Democracy* says that "Civic ignorance denies us the context through which to understand and measure the conduct of our elected officials. It curtails our ability to consider what might be good for a larger community or for the country. This is the path to democratic decline."

 Lane notes that civics is quite as important as the current emphasis on science and math, and proposes a revival of civics courses beginning in fourth or fifth grade. But we also urgently need civic literacy among adults. Again, since people are watching television for all those hours, why not run PSAs and five-minute mini-courses that cover some of these important concepts? +++

Many say that voters have short attention spans or short memories. But why is this? Perhaps voters are affected by rapid television news cycles, a barrage of advertising in all media, and relatively long working hours and commuting time. Political campaigns rarely deal with real issues. Instead of blaming voters, let us improve the system by which they are informed.

Cultivate Multiple Intelligences: A key to unlocking the potential in all of us humans is to recognize that there is more than one way of being 'smart.' Dr. Howard Gardner, a professor of education at Harvard, found the idea of intelligence based solely on I.Q. tests was far too limited. He proposed eight different intelligences as follows, and continues to add intelligences to the list:

Linguistic intelligence or 'word smart'
Logical-mathematical intelligence or number/reasoning smart'
Spatial intelligence or 'picture smart'
Bodily-Kinesthetic intelligence or 'body smart'
Musical intelligence or 'music smart'
Interpersonal intelligence or 'people smart'
Intrapersonal intelligence or 'self smart'
Naturalist intelligence or 'nature smart'

Schools tend to pay most attention to the first two kinds of ability, verbal and mathematical, defining the combination as academic ability, and rewarding them the most. Yet the other abilities are also important. For instance, those who are 'people smart' can lead in projects and programs for sustainable living, and can expand the use of conflict resolution and diplomacy that

prevents wars and other violence. People who become more 'self smart' will understand their own motivations, develop critical thinking, see through propaganda, and resist appeals to their baser emotions by would-be dictators. The need for people to be 'nature smart' is obvious.

Dylan Evans would add *Risk intelligence* to the list. This is "the ability to estimate probabilities accurately." It is about being aware of what you know and what you don't know.

There are also differences among us in learning modes. For instance, Temple Grandin notes that many autistic people have very uneven academic skills, testing at the bottom of one IQ subscale and at the top in another. She herself needs to visualize everything to learn it. Grandin says autistic people and animals think and remember in pictures instead of words. My hunch is that this is how the right-brain mode functions in all of us. But from social conditioning most suppress that part of ourselves, manipulating and storing our experiences almost solely in words.

Grandin says that compared to autistic savant skills and the feats of memory demonstrated by some animals, "Language leads to abstractification and loss of detail." The great achievement of language by our species has a cost, unless we can better integrate our brain's dual potential. People I've known who were more 'right-brained' (by self-tests) tended to be artistically or musically gifted, intuitive, and generally sensitive to other people and their environment. Autistic people are often extremely sensitive in one of their sensory modes, to the point of pain and avoidance of wide swaths of experience. Some cultures have made better use than ours does of those who are ultra-sensitive and otherwise 'differently-abled' mentally.

Bilingual, Multilingual: Worldwide, those of us who speak only one language are in the minority. According to Eric Garland in the *Futurist*, "Fully 66% of the planet is bilingual." Many people speak a native tongue in addition to their country's official language. In certain regions a *lingua franca* or trade language such as Swahili is used for business and general communication. The original *lingua franca* was a trade language used by a number of language communities around the Mediterranean from the Middle Ages to the 19th century.

Some languages have been widely used for specific purposes. In the 12th century, Arabic was the language of science and diplomacy because more books were written in Arabic than in any other language. It is still the native language or *lingua franca* for 22 countries. German used to be recommended as the second language for those majoring in scientific fields. French became the language of diplomacy in the 17th century and remained so until after World War I because of its precise definitions and clarity. The UN has two working languages, French and English.

Today English is the *lingua franca* of international business, science, technology, and aviation, and often of international diplomacy, although for that purpose English is said to be more ambiguous and blunter than French. Half of the world's books are in English. But if English had been the first language of a small, isolated nation instead of the British Empire and then the American Empire, it would not be high on anyone's list as the world's ideal language. As a hybrid of several language families, its spelling is exceedingly irregular. Of 380 spelling rules, only one has no exception, which is that no English word ends with the letter 'v'.

Few Americans speak any tongue but English, while more than half the residents of the European Union speak a second language and more than a quarter of them speak three tongues. By contrast, only 10% of United States citizens are bilingual. Geographer Harm de Blij says

> It is well established that people speaking English as their first language are among the world's least multilingually capable, whether in Britain, America, or Australia. The imperial legacy of English has left a residue of indifference as well as incompetence. [However] in an increasingly multilingual world, English-only speakers may find themselves at a growing disadvantage.

Despite the idea or ideology that English should be the official language of the United States, the nation is in fact becoming bilingual, led by businesses that want to sell to the large market of people who speak Spanish better than they speak English. This de facto bilingualism could be a very good thing, for the following reasons. It would overcome the provincialism and insularity of a nation that fashions itself as the leading world power while most of its citizens do not speak anybody else's language. And the experience of learning a second language stretches one's mind and takes it out of accustomed ruts of thinking. Spanish is an ideal second language because it is a major world language and relatively easy to learn, spell, and pronounce. After various Chinese dialects, and vying with English, Spanish is the second or third most widely spoken language in the world, with about 400 million speakers. It is the primary language in twenty countries with their distinctive arts, music, literature, cuisine, sports, and architecture. +++

Here's a good sign. The public library in the next small city over from mine has just acquired a new online language learning program that offers a short course for tourists in 22 foreign languages and nine in-depth courses including Pashto, the official language of Afghanistan.

Language Diversity: De Blij says that tens of thousands of human languages may have already come and gone. Currently only ten languages serve over half the world's people. About 6,500 languages are still spoken but half of these are endangered, and linguistic experts expect globalization to threaten many more. Markets have no particular use for unique languages, most of them used by smaller groups in less industrialized nations such as the 900 mutually incomprehensible languages spoken in New Guinea where small tribes were isolated by mountains and jungles. There are more than 2,000 languages in sub-Saharan Africa and anthropologist Richard Hooker says that languages spoken by Native Americans "are mind-bogglingly diverse and nearly numberless." Fourteen to fifteen hundred tongues are still spoken in South America. These many tongues encode the world views of very different cultures.

Language is not only a tool; it also shapes minds. Lera Boroditsky, Stanford cognitive scientist, says "Different languages invite speakers to develop different cognitive skills." Many Asian and most African languages are tonal, and this may have a relationship with musical abilities. Hooker says that Native American languages do not make the clear distinctions between objects and actions that European languages do. Many North American languages are agglutinative—they combine several words into a single word (German is also somewhat agglutinative). Hooker says one consequence of agglutinative language is to tie the objects of the world more closely together. In contrast, "European languages make possible [or arise from] a world view in which action can be considered a separate entity from objects."

Thus even before modern science, European languages were predisposed to separate doer from action or from what the doer acts on. The instrumentalism embedded in European languages would certainly have advantages for scientific development, technology, and a market economy. But some other languages might have more advantages for ethics, ecological awareness, and seeing the whole picture.

Scholars and others try to document as many as possible of the world's disappearing languages. The Foundation for Endangered Languages holds conferences and promotes efforts to preserve these vanishing voices. Why conserve languages? Like biodiversity, cultural diversity is a hedge against the future. Preserving the results of thousands of years of human experimentation with language adds to our adaptive ability. Just as animals are going extinct before we know how we may need them, so languages and cultures are disappearing before we can fully understand ourselves as human beings.

De Blij points out, "Even before we know what evolutionary asset we may be losing, the homogenization of language may end a significant chapter in our cultural history." For the sake of the species, let us support efforts to preserve endangered languages. +++

Critical Thinking (or Reasonable Facsimile)

> *All our dignity lies in thought. Let us strive, then, to think well.*
> ~Blaise Pascal, 1623-1662, *Pensées*

Many years ago, Chancellor Maynard Hutchins instituted an experimental two-year college program at the University of Chicago, heavy on Plato, Aristotle, and the Great Books in general. As a teen-age college student—one of "Hutchins' guinea pigs"—I took a course called Observation, Interpretation, and Integration (known familiarly as O.I.I) which was officially "the culminating course of the college." Frankly I don't remember the content of O.I.I .after all these years but its name certainly describes the ideal plan for critical thinking. Observe for yourself, interpret what you observe with all the mental tools at your command, and integrate this knowledge into everything else you know. This process is sorely lacking in ideological thinking, caught up as it is in borrowed abstractions and factoids that were never put to any test.

Similarly, the International Baccalaureate Organization has its "flagship element" course called Theory of Knowledge (TOK), the only course mandated for all students in the IB Diploma Program. According to the IBO website, TOK has these aims for its students:

> Reflect critically on diverse ways of knowing and on areas of knowledge, consider the role and nature of knowledge in their own culture, in the cultures of others and in the wider world, [and] be aware of themselves as thinkers, encouraging them to become more acquainted with the complexity of knowledge. It is a stated aim of TOK that students should become aware of the interpretative nature of knowledge, including personal ideological biases.

TOK has no standard syllabus but uses a process of discovering and discussing students' own views. The IBO website says "As a thoughtful and purposeful inquiry into different ways of knowing, and into different kinds of knowledge, TOK is composed almost entirely of questions. The most central of these is 'How do we know?'" This question is the fundamental question of epistemology, the field of philosophy concerned with the basis for knowledge. TOK also aims to help students "make sense of what they encounter" by examining the reliability of sources, distinguishing between good and poor reasoning, and spotting bias.

Incidentally, at least three U.S. communities have had confrontations, even a couple of lawsuits, about the International Baccalaureate program in their high schools. According to a news article, most of the complaints in the Fairfax, Virginia district were about the theory of knowledge course as well as subject offerings such as environmental systems, technology and social change, and peace and conflict studies. Opponents called the program Marxist, anti-Christian, even an international conspiracy, although President George Bush had praised the IB program in his 2006 State of the Union address.

The term 'critical thinking' has become something of a buzzword without being well-defined. Searching the Web reveals varying approaches to CT. Some consider it in terms of formal logic and college courses. Others equate it with the scientific method or a body of accepted scientific understanding. For some, critical thinking is synonymous with debunking of religion and New Age practices, alternative medicine, or 'pseudo-science.'

Few web proponents of CT go into detail about how the lack of critical thinking endangers our democratic system. In fact the need is urgent to teach at all levels from elementary school to adult how to immunize oneself against advertising, propaganda, and biased sources. Otherwise we make consumer choices, form opinions, and change our minds on the basis of false or distorted information repeated over and over. This process was very evident in the summer of 2009, as polls indicated people's opinions changing in tandem with the intensity of demagogic campaigns against health care reform on talk radio and Fox News.

But there is a tradition of critical thinking that is not identical with formal logic, the scientific method, science, debunking, or particular religious and political opinions. So let us try to define what we are talking about. This is not so easy because many definitions of CT are really extended definitions that describe the various qualities and skills of the ideal critical thinker. For example, the Foundation for Critical Thinking carries the following brief definition of CT by Linda Elder: "Critical thinking is self-guided, self-disciplined thinking which attempts to reason at the highest level of quality in a fair-minded way."

Edward de Bono, a scholar who invented the term 'lateral thinking,' would rather talk about thinking in broader terms. He identifies CT with logic, analysis, and academic scholarship. In *Teach Your Child How to Think* (1992) De Bono maintains that there is too much emphasis on critical thinking at the expense of other important thinking skills such as design and creativity. De Bono says, "About 85% of ordinary thinking is perception. Most of the faults in thinking are faults of perception (limited view, etc.) and not faults in logic. But people persist in believing that logic is the basis of thinking." De Bono points out that every beginner in logic knows that it is limited by its starting premises or perceptions. He emphasizes perception because, he says, it is the most neglected aspect of thinking.

De Bono says most schools don't teach thinking, although a few teach "the limited thinking skills involved in information sorting and analysis." In 1972 De Bono launched his CoRT Thinking Program now used by millions of students world-wide, even by elementary students.

The CoRT course includes much more than critical thinking. De Bono believes that wisdom does not come solely from age and experience, but can be taught along with other thinking skills. A sense of CoRT's scope comes from one of de Bono's attention-directing tools, "The Six Thinking Hats," described in his book *Teach Your Child How to Think*. Briefly, while wearing the White Hat you work with facts, figures, and information. When classes in the United States teach critical thinking—the few that do—it is mainly White Hat thinking, related to specific subject-matter. The Red Hat deals with emotions, feelings, hunches, and intuition, all of which de Bono says play a central role in thinking. The importance of emotions in bias, for instance, or of intuition that subconsciously makes patterns from subliminal perceptions, would seem to be evident, but these are often ignored or even denied.

Continuing with the hats, wearing the Black Hat one uses caution and judgment, fitting the facts together. The Yellow Hat concerns advantages, benefits, and savings. The Green Hat explores new ideas, evaluating suggestions and proposals. This hat seems closely related to creative or lateral thinking. Last, but quite important, the Blue Hat is thinking about thinking— one might call it meta-thinking. It is self-control of the thinking process. De Bono says people should be able to use all of these approaches as required by the situation.

There is of course much more to de Bono's method than the Six Hats—there are for instance other "attention-directing tools" such as CAF (Consider All Factors), APC (Alternatives, Possibilities, Choice), and OPV (Other People's Views). His book is well worth a read especially by parents and educators. Here I would only point out that *thinking* is indeed a broader subject

than *critical thinking*, while critical thinking itself should not be narrowed down to become only logic or only scientific thinking, much less only debunking.

What Linda Elders describes and the Critical Thinking Foundation seems to promote is sometimes all-Hat thinking and sometimes de Bono's Blue Hat thinking or meta-thinking. I propose a clarification of terms, in which 'critical thinking' refers to Blue Hat meta-thinking, O.I.I., the IB's course in Theory of Knowledge or the kind of critical thinking promoted by the Foundation for Critical Thinking. In other words, taking charge of one's thinking.

CT in this broader sense would include sub-skills in logical reasoning, evaluating information, using the scientific method, self-understanding, building an argument on evidence, detecting bias and deception in advertising/propaganda techniques, learning about cognitive science, and debunking scams. Blue hat meta-thinking would also recognize when it is time to change gears or put on another hat, perhaps the Green Hat of creative thinking.

The Conventional Wisdom

> *Tell people something they know already and they will thank you for it.*
> *Tell them something new and they will hate you for it.*
> ~George Monbiot, author of *Heat: how to stop the planet burning*

People who are reasonably well-educated and believe that they are independent thinkers are often unaware how much their opinions are shaped by the media-made conventional wisdom. Take the current notion that religion is the main cause of wars, civil wars, and terrorism, as expressed in the following letter to the editor of *Wired* magazine: "The conviction that one's chosen religion is the only path to salvation and that other religions are populated with infidels deserving of conversion or slaughter is at the crux of almost every struggle on the planet today." This overstatement is based on a narrow range of current events preselected by the media and pointed at Islam. It ignores many current struggles based on nationalism or ethnicity, competition over depleted resources, geostrategy, Marxist and peasant rebellions, resistance to occupation by foreign powers, machinations by the CIA and by other countries' intelligence agencies, and economic or political competition among local warlords or drug-lords.

It is good idea to know something about where your ideas came from—their provenance. Often the nugget of conventional wisdom that 'everybody knows' was actually born at a PR agency or think tank. This does not necessarily make it untrue—it is a fallacy, the genetic fallacy, to reject information solely because of its source. Yet the origin is an important bit of context. That is why people are supposed to cite the sources of their information.

Group Dynamics

> *Every human being brings emotions, past experiences, good and bad habits to every encounter they have. Why should intellectual encounters be any different?*
> ~Wendy McElroy, *The Reasonable Woman*, 1998

Human transformation is not all about statistics and principles—it is very much about working together in small groups of people. This can be quite difficult. As an activist, I have repeatedly experienced the following scenario. A small group of well-meaning people sets out to right a wrong or improve their community and before long the whole project is caught up in a tangle of opinions and personal conflicts. One or two people dominate the proceedings, and

nobody seems able to stop them. People agree on goals but balk at the details. Cliques appear, based on ego identifications. People talk and talk but don't get anywhere. Those who accept leadership responsibility lack the necessary skills to work with all the colliding egos or focus the group. In frustration, people drop out and the group eventually dies.

There are several ways to overcome these pitfalls and have more effective meetings. An experienced facilitator of citizens' groups meetings, lawyer Larry Froelich, says citizens' groups often lack a leader who will draw out people's ideas, show respect for all persons and opinions, keep the group's focus on the topic, and make sure that everybody has a turn to speak. Froelich says an effective facilitator is a person who has no particular agenda of his own and whose aim is to bring out the group's potential to solve problems.

For process, Froelich recommends the consensus-building techniques outlined in *Winning through Participation*, an introduction to the facilitation process. Effective meetings are work sessions, based on strategic thinking. "People write stuff down, put ideas up on the wall, they pick out the best four ideas, and so on." Froelich notes that Robert's Rules of Order are not the best way to conduct small citizens' groups. These rules were designed for more formally-organized groups in which individuals are representing others.

People need models of an effective meeting and of an effective leader. Actual participation in a constructive, well-run meeting is ideal. Public school classes could show videos and model meetings. Most of the information currently available is for organized associations, large public meetings, or work meetings, rather than small citizens' groups of 25 or fewer people. +++

The emphasis on competition in American schools and culture is one of the obstacles to overcome in citizens' groups. Competition results in too many people needing to show who is smarter than somebody else rather than in solving problems. Others are afraid to talk in groups. The larger solution is that we need less emphasis on competition in our culture. It is as though the capitalist economic model is taking over all areas of human interaction. The focus on competition also leads to dualistic, either/or templates. Keep in mind that debates are not the only way to handle conflicting views. Instead, we should have the opportunity to see a great many models of how to conduct differences of opinion—modeling in the media, at public events, and among students in schools and college classrooms. +++

Consensus is a very useful democratic skill that could be used much more widely. It is a group process of coming to a general agreement while trying to resolve any objections of the minority. Consensus is an alternative to the win/lose voting model that often results in the tyranny of the majority. It is especially useful in smaller groups where people know each other.

It was my privilege to participate twice in meetings led by people experienced in this technique. The first was a small group composed mostly of Quakers, a group which historically developed or refined the practice of consensus. My second experience was the real test: an international bioregional conference of several hundred people, including well-known individualists with strong opinions. The skilled facilitator was Caroline Estes, a Quaker from Oregon. That this meeting moved right along and produced useful agreements is evidence that the method can work with groups as large as several hundred, given skilled facilitation and basic good will of the participants. However because this was a time-limited situation, a handful of attendees said later that they were not fully satisfied with the agreements they made.

The consensus process takes time because it tries to gather and synthesize the ideas and beliefs of all participants in order to come to a final decision that is acceptable to everyone. It aims to be cooperative, inclusive, and solution-oriented. While consensus can be a time-

consuming process, the resulting agreements are much more lasting and do not create the bitterness and dissension that often happens after a vote. People tend to be committed to the cooperative decision when their concerns have been taken into account. +++

A group operating with traditional consensus first discusses the item under consideration to identify the various opinions and discover the sense of the group as a basis for a proposal. When the facilitator calls for consensus, each member must actively state whether she agrees or disagrees with the proposal. After dissenters present their objections, the proposal is rephrased to address their concerns. The cycle is repeated until a decision is made that satisfies all. A dissenting member may declare reservations or stand aside, while letting the motion pass. An individual with strong reservations can 'block' a proposal he believes is immoral or destructive to the group. The strongly opposed person may then work with others to find a solution.

Because consensus takes time, some groups allow consensus with less than full unanimity, such as 'unanimity minus two' or 'Rough Consensus.' People may be wary of consensus decisions because it is possible that psychological coercion could force people holding minority opinions into going along with the majority, resulting in a subtler form of the tyranny of the majority or group-think. Thus a more realistic or transitional option for many groups is to aim for a super-majority, while recognizing and allowing full expression of dissenting opinions. (Note that a super-majority is different in a small group from a legislature where each individual represents the interests of many others, bringing politics into play.)

Most people are familiar with consensus in jury trials. When it is a serious matter of guilt or innocence, when the innocent may be punished or the guilty go free, people rely on consensus rather than the split decisions characteristic of legislatures and most organizations. But there are many other serious matters that would be better decided by consensus or a super-majority rather than a 4 to 3, or 5 to 4, or 51 to 49 decision that does not put the issue to rest.

Suppose non-profit organizations, churches, and schools trained as many group leaders as possible in facilitation skills and consensus decision-making. Eventually that could help lower the decibel level especially in politics. Consensus decision-making is almost the 'opposite' of polarizing propaganda and the partisan use of wedge-issues. +++

The People's Assembly: Meanwhile, a new consensus process for action groups works faster and can be easily learned and spread. It is based on work by protesters in Madrid in the 15th May Movement (2011) and has been adopted by the Occupy Wall Street movement among others. A posting from the Madrid group describes the aim of 'Collective Thinking':

> The normal response of two people with differing opinions tends to be confrontational….The aim of Collective Thinking, on the other hand, is to construct. That is to say, two people with differing ideas work together to build something new…something that neither of us had envisaged beforehand. This focus requires of us that we actively listen, rather than merely be preoccupied with preparing our response.

The Assembly is a participatory, decision-making group which works towards consensus. The group might be small or large, a village or a collection of people previously unknown to each other. As practiced by OWS, there is a daily mass meeting, the General Assembly or GA, which centers on practical questions rather than ideological discussions. Each proposal must meet these questions: What is being proposed? Why? How can we carry it out if consensus is reached? The mantra is "What Why, How?" Instead of microphones or bullhorns there is the "human mic." The speaker says a few words, the audience repeats in loud unison, and so on.

People silently respond to the words with hand gestures. New Yorker writer Hendrik Hertzberg describes this as "an utterly low-tech, strikingly human, curiously tribal means of amplification."

The group may reach a direct consensus without any opposition, or else work on an indirect consensus. The next step is a short debate, with three arguments for and three against. The Assembly is again asked for its opinion, responding through gestures and body language such as applause or arms that are raised in various positions. If consensus is still not reached, the Assembly discusses the issue in small groups for about five minutes, who are asked once more for their opinion. There are still further steps to reach indirect consensus.

In large Assemblies people may assume one of several roles to aid the meeting, including the Moderator(s); a Logistics Team to organize the space and attend to physical needs such as seating, water, and shade from the sun; a Floor Time Team to coordinate turns for people wanting to speak; a Facilitating Team which helps the Moderator maintain focus and impartiality; the Interpreters (sign language); and a Minutes Team. There may be a team of moderators who rotate if the Assembly is especially large or tense. The moderator can ask to be replaced, and can also be replaced by consensus of the Assembly.

Anti-Consensus: In sharp contrast to the participatory decision-making described above, a world betterment group called The Zeitgeist Movement's official blog explicitly rejects the usual practice of consensus and would replace it with "Rational Consensus" as follows:

Rational Consensus is not to be confused with the historically failed traditional Mob Rule Democratic Process of "one person - one vote". TZM does not condone total, open mob rule democracy as it is based on the faulty assumption that each participating party is educated enough to make the most intellectually appropriate, unbiased decision. Proper Decision Making has nothing to do with the interests of a group of people, nor the interests of a single person. *Proper Decision Making is a purely technical process of logical assessment of a given set of variables* and hence can only be based on upon tangible, technical referents - not abject, unsupported mass value opinion, which is what the pure democratic theory erroneously assumes holds integrity…. [Rational Consensus] requires each conflicting party to present their Case to everyone else. This Case must consist of technically reasoned factors/instances/examples which can be evaluated outside of the expression of the person who is presenting the problem.... *If the argument cannot be quantified in some manner - it isn't valid as an argument.* [Italics added]

This technocratic, elitist approach seems misguided, at best. TZM's stated mission is "the application of the scientific method for social change" in order to create a sustainable society. It is based on an orientation that I have previously called 'scientism' which assumes all relevant questions are scientific/technical ones, and which does not recognize emotions, metaphysics, or value systems. But this can only lead to a sterile authoritarianism. TZM claims to have 400,000 members in 45 countries, mainly in the United States and Europe. The current popularity of ideology based on scientism in the United States may well be in reaction to the sorry state of politics, media, and public discourse as well as to a strident Christian fundamentalism. It also owes something to our immersion in digital technology, and in particular to individuals who are part of what some term 'WAMLIC'—White Affluent Male Libertarian Internet Culture.

Part Two: Human Unity Consciousness

It is a glorious destiny to be a member of the human race.
~Thomas Merton, Trappist monk, author, and poet, 1915-1968

The human race is one, and it is greater than the sum of our parts. We are greater than our philosophies, religions, and sciences. We are greater than any one civilization including Western civilization. Taking a long view, civilizations come and go, and one succeeds another. In an even longer view, most of our experience as a distinct species has been before civilization ever began. If Homo sapiens is 200,000 years old, and civilization began 10,000 years ago, then 95% of our past was lived as Stone Age hunters and gatherers. Do we suppose that since the microchip's invention, we have turned into an entirely different sort of creature?

We rarely take our human membership into account, so steeped are we in nationalism and other separating beliefs. Let us widen our horizons to find our true humanity. Martin Luther King, Jr. said: "Our loyalties must transcend our race, our tribe, our class, and our nation; and this means we must develop a world perspective." We must also transcend our gender, age, religion, ideology, and era.

This new perspective will be much broader than an international outlook which by definition presupposes the modern nation-state, a relatively recent human invention. Internationalism only takes us out of our national closets so that we can meet at the round table of diplomacy. It is not really about the unity of our species. Others speak of the 'brotherhood of man' which is a noble idea but unfortunately the language lacks resonance with the female half of humanity—also siblings do sometimes fight. More importantly, this phrase does not hold all the ideas which I would include in the concept of human unity consciousness.

Focusing on our shared humanity adds these four viewing scopes: *biology*, *history, future,* and *spirit*. Biology reminds us that we are biological beings that require air, water, and food. We have inborn tendencies. We are part of long cycles. We interact with other species—in fact we depend on them. Despite our unique abilities and strange aspirations, we are still part of the web of life on earth. Human unity is not about speciesism, if defined as the notion that ours is the only species that matters or deserves any rights.

When we think about humanity, we tend to think about everybody alive today. But humans have a long past together, some of which fades into a time when we were still proto-human. We might consider our human ancestors to be all those who have lived since the taming of fire, at least 400,000 years ago. If we consider our species to be behaviorally modern humans who appeared on the scene about 50,000 years ago, it is still a large family. The best estimate (by research demographer Carl Haub) is that about 107 billion people have been born since then. Consider: all those people were born with the same human potential as ours. Many of those individuals born so long ago had certain knowledge and skills that rival ours. Much of what they knew has been lost. Everything we know is built on what they knew.

Humanity also includes those yet to be born, for the rest of our shared future. We do have some responsibility for the descendants we will never see, but this requires an imaginative leap that needs some practice.

Humans have had a multitude of religious beliefs and value systems, but we are alike in that we all believe in *something* and have some notion of what is good or bad to do. This is true of atheists and secular people as well as religious ones. We share this dimension of spirit, of principles, of continually asking questions about how things came to be the way they are.

The avatars and world religions all emphasize our common humanity. For instance in early March the Hindu Festival of Colors, or Holi, celebrates the unity of all people. Baha'I promotes the unity of humanity and teaches its followers to "Consort with the followers of all religions in a spirit of friendliness and fellowship." Archbishop Desmond Tutu's *ubuntu* theology builds upon the prevailing worldview in African culture that sees the community, rather than the individual, as source of meaning and authority. The recognition of people's interdependence as part of a whole leads ultimately to human unity consciousness. Tutu has said "My humanity is bound up in yours, for we can only be human together." Yet it seems to be a constant struggle for humans to keep this god's eye view of human unity. Sometimes religions focus on the spiritual unity of believers—which is to say, only believers in that religion, not everybody on Earth.

Some who said it best did not speak directly from a religious tradition. Thomas Paine: "The world is my country, all mankind are my brethren, and to do good is my religion."

Is Humanity a Species? We could consider ourselves part of the genus *Homo*, or as the species *Homo sapiens*. Either way, we are a very young creature and a highly unusual one, maybe worthy of our own taxonomic kingdom. Yet despite our position as the dominant species on Earth, we are only one among about two million named species and an estimated five to thirty million undiscovered ones. The demotion of humanity to one of many species shocked people 150 years ago. Some believe it turns us into "just another animal." Even today many in the United States, especially evangelical Christians, reject Darwinian evolution (or evolution itself), replacing natural selection with theories of Creationism or Intelligent Design.

The word 'species' is closely linked with evolution. Darwin's theories were almost immediately seized upon, over-simplified, distorted, and applied to human culture by those who would use them to justify racism, cut-throat capitalism, ethnic cleansing, economic and social injustices, imperialism, eugenics, and master races. Some have acted as though races (poorly defined) were species. These negative associations have clung to Darwinian evolution, which is another reason that some people don't like to hear us referred to as a species. When referring to the human race as a species, I explicitly disavow racist and Social Darwinist notions that have attached themselves to the word.

Darwinian evolution may also be questioned by various philosophical, esoteric, or mystical systems that find a purpose in evolution, an Omega point or god-realization. The belief that design and purpose exists in the material world is *teleology*. Such belief systems regard humans as unique, the only creature capable of reaching God-head. The word 'species' might imply that humans could evolve by physical processes into something other than human (although this is not a necessary inference). To satisfy such objections, one may draw on the idea of evolutionary convergence to suggest the human is an inevitable, optimum life form.

However, few realize that the actual theory of evolution is in process of a dramatic shift away from Darwinism. Six decades of research in genetics and molecular biology reveal that cells themselves can organize their genome and can protect against mutations. They are "natural genetic engineering systems" and information processors, says James A. Shapiro, Professor of Microbiology at the University of Chicago. Shapiro says "We are just on the threshold of a new way of thinking about living organisms and their variations."

Thus evolutionary theory is moving away from the Darwinian ideas that were borrowed by "survival of the fittest" ideologies and is moving toward radically different conceptions. The over-reaction to evolutionary theory by fundamentalist Christians is no longer very relevant.

Chapter 6
Across Generations

The only way we can love our neighbors across time is to leave them a decent place to live.
~Robert Parham, executive director of the Baptist Center for Ethics

As a child learns the immediate consequences of his behavior, so the maturing person becomes aware of longer-range consequences—how one person's actions may affect other people down the line. This we call foresight. It takes another imaginative leap to consider the effects of one's actions 100 or 200 years into the future, yet many people and peoples have incorporated that long-range understanding into their decision-making. A Chinese version of looking generations ahead is attributed to Confucius, 2,500 years ago: "If you plant for a year, plant rice. If you plant for ten years, plant trees. If you plant for a hundred years, teach students." The Haida Indians expressed far-foresight as follows: "We do not inherit the earth from our ancestors; we borrow it from our children." +++

Another popular ancient Chinese proverb, attributed to Lao Tzu, says "Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime." But speaking literally, peoples who live near water already know how to fish. For modern day circumstances Lao Tzu might add, "Teach people to fish sustainably, don't pollute the oceans and waters, and you feed everybody for many generations."

We industrialized people could use a lot more long-range thinking and foresight, and a lot less jumping to conclusions, lazy oversimplifications, consumer hedonism, and quick fixes. One could mention here that the Free Market has little foresight. Perhaps the Invisible Hand sports a primitive eyespot like an invertebrate flatworm, allowing it to see a blurred image at a short distance; but it has no far vision and is certainly not concerned with anybody's grandchildren.

Far-foresight has been termed the *7th Generation Principle,* based on the explicit counsel of some Native American tribes. Before the United States was formed, the Iroquois Confederacy of five Native American nations asked its chiefs to consider with every decision the effect it would have on people seven generations hence, "those whose faces are still beneath the ground." Using foresight, applying the Golden Rule to people far in the future whether they are direct descendants or not, one achieves 7th generation consciousness. Seven generations encompass a time-scale of about 200 years. That is far longer than the plans of present-day leaders that often do not go beyond the next election. It is vital that we look for long range, generational thinking from the leaders of societies and nations. Thinking seven generations ahead would give our leaders and people a wholly new perspective, in which many of our present preoccupations would vanish while other concerns moved into the foreground. +++

Generativity +++

A society grows great when old men plant trees whose shade they know they shall never sit in.
~Greek Proverb

Some years ago, psychoanalyst Erik Erickson defined generativity as a concern for and commitment to the well-being of future generations. Its essence is the idea *"I am what survives me."* Erikson said that generativity is the mark of a mature adult, and people tend to focus on it

as they move into their thirties, forties, fifties, and beyond. Yet some in their twenties and teens, and occasionally a mature pre-teen also display this kind of forward-looking commitment.

"Generativity is about generating good things (and people)," according to Dan P. McAdams. The creations that we leave behind us may be our children, a work of art, a new solution to an old problem, or people who have been touched or healed or inspired by our work. Not only is generativity good for society, but research shows it is also good for generative individuals. Those who score high on measures of the quality report higher levels of happiness and lower levels of depression and anxiety.

Generativity is the essence of good parenting. One important task for parents is to shield future generations from the same psychological damage from which they may have suffered. A parenting column notes how humans tend to cling to the familiar from their childhood even when it is not worth keeping, thus perpetuating fatherless homes, drug abuse, obesity, screaming arguments, child abuse, high school dropouts, and teenage pregnancy. He says it is difficult to change such behaviors but it can be done if parents are committed to changing. While some abused children grow up to in turn abuse their own children, *this cycle can be broken*, and very often it is broken. Columnist Tom McMahon says "By eliminating one detrimental and perpetual behavior within the family, you will change the path for generations behind you."

John Kotre, a psychology professor with twenty-five years studying generativity says it begins with all the influences we've inherited—one might say, with our meme-library. Since not all of our inheritance is positive, how do we defend against internal booby-traps and bad ideas? Much depends on the quality of our ego defenses. Kotre notes that "Some methods of defense— sublimation and humor, for example—are healthier than others. Research by psychiatrist George Vaillant has found that men who used healthy defenses in their 20s and 30s became generative in their 40s. With healthy defenses, people can block passage of a destructive tradition."

It is crucial to develop healthier methods of defense than denial, repression, and projection of one's negative impulses onto others. Healthy defenses will enable people to overcome the "sins of the parents" and not visit them on their own children or indeed on their partners and associates. Similarly, many people who were brought up in a racist or violent culture have managed to overcome their conditioning so they did not teach these destructive attitudes to their own children or visit them on other people.

Planting trees, restoring a river, greening a desert or brownfield, and other earth-keeping is another form of generativity. A group in Seattle responded to the recent decline of the European honeybee on which so many crops depend, which puts attention on native species of pollinators: bumblebees and other native bees, butterflies, moths, and many other insects, birds, and bats. Sarah Bergmann and 50 neighbors with a small grant from the city of Seattle transformed a parking strip 12 feet by 108 feet into a profusion of blooming plants selected to attract native pollinators. Such examples abound across the world. In my own city and region, volunteers have restored wetlands and prairie among other earth-keeping projects.

Pay It Forward is the idea that one repays a good turn by doing good to a third party. While this phrase has become popular in recent years, the concept was used by Benjamin Franklin, who said in a letter to Benjamin Webb in 1784:

> I do not pretend to give such a Sum; I only lend it to you. When you meet with another honest Man in similar Distress, you must pay me by lending this Sum to him; enjoining him to discharge the Debt by a like operation, when he shall be able, and shall meet with another opportunity. I hope it may thus go thro' many hands, before it meets with a Knave that will stop its Progress. This is a trick of mine for doing a deal of good with a little money.

This simple but significant behavior actually goes back in time to before money existed, when the whole tribe or village participated in a *Gift Economy* (more on this later).

Volunteerism, Creative Activism

> *Deeds of loving-kindness are equal in weight to all the commandments.*
> *~Jerusalem Talmud*

Volunteers are the backbone of charitable efforts, actively furthering environmental causes, social justice, social welfare, art, education, and peace. Unfortunately, American social attitudes and stagnant wages have forced certain groups that once were the founts of volunteering into the so-called productive economy of paid labor. First it was housewives, then college students, and now older people who have lost much of their retirement account and are forced back to work or who must work for more years before retiring.

Volunteerism includes those who work in generational causes for a small subsistence salary, for example the Peace Corps, AmeriCorps, and community organizers funded by churches or foundations. In March 2009, Congress voted to triple the number of positions in AmeriCorps, which has been receiving a record number of applications. Members help build affordable homes, teach computer skills to the unemployed, and perform other public services, for a yearly stipend of about $12,000, similar to minimum wage.

Many creative people contribute their talents to the whole community. For example, game researcher Ryuta Kawashima, who co-developed Nintendo's Brain Age series, gave up his half of the royalties to help fund $6.5 million in construction at Tohoku University.

The Creative Visions Foundation was established by the family of artist Dan Eldon, who was killed in Somalia in 1993 while he covered the conflict as a photojournalist for Reuters. The Foundation's Creative Activist Program sponsors, mentors, and supports "filmmakers, artists, musicians, writers, environmentalists, humanitarians and leaders of social movements" who have innovative ideas for positive change. In its first eight years (since 2004) the program catalyzed over 90 productions and projects on five continents. One of these is "Theatre for Humans," a production company which began its mission of "giving voice to those whose stories must be told" with a fourteen weeks' journey across Thailand, India, South Africa, Kenya, Rwanda, the DRC, Burundi, Egypt, Haiti, and Ecuador. They probed a number of global issues facing women, such as sex slavery and human trafficking, rape as a tool of war, and female inclusion in politics. A play based on these voices is set to open in spring of 2013.

Other creative people have woven the world together with music, film, and arts. The film "One Day on Earth" debuted in 2012, the creation of two aspiring filmmakers who had collected, translated, and edited more than 3,000 hours of footage that was taken in virtually every country in the world on the same day—October 10, 2010. People in over 160 countries saw free screenings, and current plans are to make this film a yearly event.

Activism for peace, social justice, or environmental causes is often led by performers such as Bono, Oprah, George Clooney, Willie Nelson, and many others who use their names, time, and financial resources to work on the world's problems. A private individual's creative ideas and dedicated energy can also move mountains. This person may have an idea whose time has come, or be in the right place at the right time, or is simply focused, selfless, and persistent. For instance, Frances Landers was a medical volunteer in rural west Haiti in the early 1980s when

she saw a village without a school. She vowed to change that situation, eventually founding dozens of schools enrolling thousands of students by raising money from churches.

Philanthropy, Philanthrocapitalism: Generativity may be expressed by wealthy people as philanthropy. Andrew Carnegie, after using ruthless business practices typical of his time and class, went on to establish the public library system in the United States. A Sudanese billionaire, Mo Ibrahim, who built up and sold an African cell phone network, set up a system of large cash income prizes to reward African leaders who govern well in their respective countries. Ibrahim said he wanted to address the reluctance of many African leaders to relinquish power: "A situation in which leaders face the three choices of relative poverty, term extension, or corruption is not conducive to good governance. And the continent's problems will not be solved unless governance improves radically." Such examples of philanthropy can be multiplied many times, as for instance the Bill and Melinda Gates Foundation, Warren Buffet, Ted Turner, Google.org, or the Clinton Global Initiative.

The publication of *How the Rich Can Save the World* (2008) encouraged corporations to be more philanthropic, to show enlightened self-interest. But some critics are wary of imposing the corporate model on the charitable sector. Michael Edwards (*Just Another Emperor? 2008)* says the philanthrocapitalism model baldly assumes that business methods can solve social problems and are even superior to other approaches. Some philanthrocapitalism proponents claim that these methods can actually achieve the transformation of society.

Kavita N. Ramdas, president of the Global Fund for Women, finds two basic contradictions in capitalist philanthropy. As the world becomes ever more unequal and unfair, a few individuals choose to use some of their enormous wealth to address specific problems with measurable outcomes. But she says they are missing deeper questions such as: "What ails a global economic system that produces endemic inequality, crushing poverty, and food insecurity? The new philanthropy avoids exploring what is wrong at this systemic level—where a single individual's net worth can become larger than the combined GDPs of some of the world's poorest nations."

The second contradiction Ramdas sees is that despite the obvious drawbacks of a pattern of development in the West that has brought unsustainable consumption, climate change, and health problems related to lifestyle and environment, philanthrocapitalism seeks to bring this same model to the rest of the world. Ramdas sees the new foundations employing former hedge-fund managers and software-developers who are motivated by technological solutions and "fix-the-problem" mentality. And the problem is defined narrowly.

Edwards says the United States alone is projected to create $5 trillion worth of philanthropy by 2050. He questions whether these vast resources will be used for social transformation, or will they be frittered away in spending on the symptoms? Bishop and Green counter that philanthrocapitalists have a lot to offer the world, but they need to be transparent about what they do and open to challenge. In any case, let us not give up on our own efforts to effect urgently needed changes because somebody else with more resources is supposed to be working on the problem. And let us keep the spotlight on what these new philanthropists are doing, to encourage them to seek transformational solutions with plenty of grassroots input and feedback.

Rites of Passage

What shelter to grow ripe is ours? What leisure to grow wise?
~Matthew Arnold, 1852

Earlier societies held important rites of passage to mark the adolescent's entrance into puberty and the larger community. Other rites surrounded marriage, births, and eldership, the time when householder duties ended and the person was free to develop his or her wisdom. What we have left of these rites does not have the same significance. For instance the rite of marriage is often overwhelmed by the extravaganza, in which it is nothing to spend $20,000 on the day's celebration. Retirement from paid work does not imply eldership.

As mentioned earlier, real adolescent rites are all but forgotten, so young people make up their own rites—often risky and anti-social ones. I was reminded of this confusion about growing up while watching *Star Trek*, the 2009 movie, which glorified physical fighting among young men, sometimes as a prelude to male bonding. But this is more appropriate behavior for nine-year-old boys than grown men, who are capable of doing much greater injury to each other, and should have learned other ways to resolve conflicts and to bond. Vicious fights in movies seldom lead to skull fractures, broken ribs, or ruptured kidneys, only to a badly bruised face that heals in a day or two. Accompanying previews showcased several more examples of this "action-packed" genre with its battles against alien or robot enemies, special effects, and explosions. Is it coincidence that this kind of film is popular in a nation pursuing the aim of war in space—despite the opposition of virtually all other nations?

The most dangerous substitute for adolescent initiation rites is the idea that the young man will finally achieve manhood by going to war. Military duty is not only several years too late but it perverts and narrows the social and spiritual benefits of puberty rites. Anthropologist Paul Shepard, tracing human development from primate to Pleistocene hunters and gatherers to what he views as the recent distortions by civilizations, sees a built-in process aimed towards producing wise and integrated individuals. He believes that humans are genetically programmed to become conscious, to understand ourselves as a species among other species, in a place and time which integrates dreaming and waking. One might call such understanding spiritual or cosmic consciousness, though Shepard does not use such words. The soul and the sacred have been misunderstood and discounted in our materialist culture, sometimes co-opted by religions that are hardly less materialistic. However, it is easy to accept that Nature would prepare all her creatures to live in nature. The anomaly of civilized man is what needs explaining.

Robert Moore and Douglas Gillette say in *The Warrior Within*: "The most serious consequence of ceasing initiatory practices is a loss of a periodic social forum for considering the nature of maturity. A society has to know what maturity is before it can pass the knowledge on." For an understanding of what has been lost, listen to the words of the Siouan prophet Black Elk, as told through John C. Neihardt. The hunting gathering peoples of Europe and Asia were successively swallowed up by thousands of years of encroaching civilization, but on our continent this was telescoped into a few generations. Black Elk saw millennia of change in just one lifetime.

> The life of man is a circle from childhood to childhood and so it is in everything where power moves. Our teepees were round like the nests of birds and these were always set in a circle, the nation's hoop, a nest of many nests, where the great white spirit meant for us to hatch our children. But the Wasichus [white men] have put us in these square boxes. Our power is gone and we are dying, for the power is not in us anymore. You can look at our boys and see how it is with us. When we were living by the power of the circle in the way we should, boys were men at thirteen years of age. But now it takes them very much longer to mature.

Can such a process be reversed? Native Americans have gathered the remaining seeds of their cultures, and many stubbornly remain traditional people. But what of the rest of us who lost our models so very long ago? Shepard is pessimistic about the collapse of the traditional, biological program for developing a truly human being, particularly that for integrating an adult male. He says that the human is programmed to clarify his identity in the second half of the second decade, and if he does not he will be "intellectually, emotionally, and socially retarded the rest of his life....Incomplete classification of the self and of the world causes the inept individual to put himself at the center of the universe."

The results of putting ourselves at the center of the universe we may see in destruction of our environment and in perpetual wars. But we need not be entirely pessimistic about possibilities for following our genetic timetable, which could still place us back in nature, and heal the wounds of our rupture. The potential for truly human development is still in our genes, and begins anew with every infant and child. One requirement is a varied natural world for the child to observe directly. That may be hard for urban, working parents to manage, but not impossible. Especially for younger children, first-order or direct experience is much preferable to that education which contains only written language, manmade objects, and knowledge imparted by others. But this is not an either/or; the child needs both kinds of experience. Let him interact with the natural world and also live in a learning-rich home that includes books.

Coming of Age: Observing Jews have retained puberty rites for both boys and girls in the Bar Mitzvah and Bat Mitzvah. There is a growing movement to add similar rituals to secular society, and organizations have begun to develop their own versions. +++ For instance, 'Rites of Passage,' a non-profit based in Santa Rosa, California, provides local youth with an opportunity to participate in a vision quest in the wilderness. One youth reflected a few years after his experience that "The beauty of the vision quest is that it is a defined ritual that is meant to put your life into perspective." Unfortunately this particular program may cost too much for some to participate. Another Bay-area organization, 'Youth Speaks,' provides free after-school poetry workshops and poetry slams. While the program was not created specifically to provide rites of passage, Ian Elwood says "through the ritual of poetry writing and performance, youth find their voices, become outspoken members of society and find their place in the world around them."

A National Rites of Passage Institute based in Cleveland, Ohio offers 'The Journey' as an adolescent initiation process for male and female youth aged twelve to seventeen. Some churches are developing rites as part of a youth ministry, since adolescents without guidance will develop their own often dangerous or humiliating rites. Young people have a strong urge for some kind of initiation and it will happen even without a healthy blueprint. Paul Hill, Jr. writes about the special need for Africa-centered sources of rites of passage for African-American youth whose original culture was fragmented through slavery. He notes that the Governor of Ohio in 1990 established through executive order a Commission on Black Males which included the recommendation to create and sponsor rites of passage for African-American men.

Other Rites of Passage: Many cultures have age-based rites of passage besides the adolescent initiation rite. A widespread guideline for celebration is based on changes in the life cycle occurring approximately every seven years, such as the naming ceremony at birth, going to school or confirmation at age seven, puberty rite at fourteen, and legal adulthood at twenty-one. There might also be full adulthood at twenty-eight (a common age for men to marry), parenting of one or more children around thirty-five, male mid-life at forty-two, female menopause around

forty-nine, grand-parenting at age fifty-six, and eldership at sixty-three. There may well be continuing stages of eldership at later ages.

Some families create rites for their own children, for instance, they acknowledge 'the helper' at age three. This coincides with a developmental stage when children are drawn to imitate their parents and assist in simple household tasks. Also, by three the child is usually toilet-trained, has completed the task of affirming his identity through negation (the 'Terrible Twos'), is more dependable about obeying safety rules when the parent is not immediately present, and can play with or handle objects containing small pieces without much danger of putting them in the mouth and choking. Another occasion for a rite of passage is the loss of the first baby tooth, potentially disturbing to a child, but a sign of growing up.

A UK non-profit, The LifeRites Group, assists people with rites of passage including baby namings, coming of age ceremonies, handfastings (similar to engagements in the United States), wedding blessings, eldership ceremonies, funerals, and woodland burials. Some U.S. groups are creating new rites of eldership that combine the wisdom of past cultures with that of our own.

Besides age-related passages, adults are often confronted with anxiety-provoking life crises and transitions that a community ritual could help resolve, such as divorce, surgery and sickness, job loss, mid-life career changes, relocation, 'empty nests,' retirement. We need to fashion new ceremonies to help reintegrate our lives through such changes. As families and communities, we can also develop celebratory rites to re-inhabit our living places and dream spaces. Indeed, people are increasingly engaged in this process, borrowing and adapting a number of traditions. They celebrate the natural forms, seasons, and species of each bioregion or the planet as a living whole, as in an All-Species Day or celebrations of the solstices and equinoxes.

Eldership +++

It's sad to grow old, but nice to ripen.
~Brigitte Bardot, French actress

The role of grandparents is to think about the future of their kin and to expand the concept of family to the larger community and all humanity. And so the natural season for generativity is eldership or what we in the West call retirement. Many of the world's activists for peace, social justice, and environmental causes are people who have retired from paid work and now dedicate themselves to the longer view and everybody's grandchildren. They have the great advantage of having lived through historical events and eras when people thought and acted differently and so are, in a sense, time travelers. In the United States today people over age 65 are the only generation not formed by television viewing in their childhood. Of course, some younger individuals did not watch much television, and some older ones became addicted in adulthood, but as a generation, older people have a distinctive perspective because of their more active and participant childhood.

The role of elders is not confined to human beings. A scientific team from the University of Sussex studying African elephants in Kenya found that the breeding success of elephant families is linked to the age of its matriarch (elephants are led by the oldest female). Families whose matriarchs were over age 55 were much more likely to bunch together defensively when they heard calls from unfamiliar elephants, and they also produced more calves per female.

Among humans, eldership is not automatic but requires certain social attitudes and self-development. Neither old people nor wisdom receives great respect in our culture. The social rite

of becoming an elder by retiring with a gold watch or by starting to receive Social Security payments or joining the AARP is hardly the introduction to a new period of life in which to develop spiritual consciousness, as the world's ancient traditions hold it is. Despite a shallow culture that tries to persuade older people to continue as consumers and to imitate the self-absorption of youth, many are in fact ready to work for the benefit of their species.

The Green Seniors Movement began in the United States and UK and is attempting to become a global movement for positive change especially concerning global warming. Their site notes: "Seniors have a collective memory of earlier times when far less energy was consumed, and yet life was good." The movement is spreading to places such as Puerto Rico and Ethiopia, and serves as a network for similar organizations elsewhere, such as Grey Power Community in Australia. In July 2007 the Green Seniors received formal endorsement by the UN. Examples of 7th generation thinking listed on the Green Seniors website include GrayisGreen, a small group based in a retirement community in Connecticut and led by the ninety-year-old Robert Lane, former professor of political science and a prolific author. GrayisGreen now focuses on developing standards for environmental management for communities that want to be greener. Lane is also trying to organize a senior conservation movement across the country.

The Purpose Prize is offered to individuals over 60 who are 'social entrepreneurs,' people using their working experience to meet larger challenges in their encore career. The 2008 winner, Jock Brandis, retired from technical work in the film industry and now uses his skills to improve the lives of Third World farmers beginning in Mali with his invention of the Universal Nut Sheller, a prime example of appropriate technology. His organization The Full Belly Project currently has a presence in 17 countries.

Some of the most dedicated activists have been and are older persons. For example, Franciscan priest Father Louis Vitale said, as he prepared for arrest at a recent protest at an Arizona training facility for military interrogators, "When you see that people are being tortured, what's a few months in jail?" The 76-year-old activist estimates that he has been arrested for civil disobedience between 200 and 300 times.

A Course in Survival +++   When they hear the word 'survival,' most Americans probably think first of economic survival (especially now). For some this is simply getting and keeping a job, while for others there is an added dimension of status and competition. Pressure is on most children to make good grades and on many adolescents to partake of extra-curricular activities that will adorn their resumes for college entrance. Upper-middle-class parents may sign up their children for certain schools as soon as they are born, to give them a head start on top-level jobs.

But as a member of the species Homo sapiens, survival means more than getting a paycheck. We devote little energy to real survival in actual world conditions of ecosystem failures, resource depletion, industrial disasters, and war. Without any greater knowledge of these world conditions they may seem abstract until they break through to consciousness because of a disaster such as Katrina. It is also important to know that survival means much more than stocking up on freeze-dried foods, with the guns and ammunition to defend them against one's neighbors. We should instead be ready for an assortment of contingencies.

Since most of us know so little about how to survive in real emergencies, short-range or long-range, let me suggest a Survival Course as a requirement for young people in, say, eighth or ninth grade. It would concern survival for the individual, family, group, and species. Besides teaching adolescents to deal with immediate emergencies such as home fires or local floods, the course could discuss likely changes in the future. These include more severe storms and other

climate disturbances, greater numbers of environmental refugees, and the likelihood of ever-higher fuel and gasoline bills because of diminishing resources at a time of rising demand. In other words, teach students how better to cope with the world that they are likely to inherit.

The survival course could include methods of self-reliance and social cooperation under conditions where the usual systems have broken down. It could even give some pointers on how to live like a caveman in a post-Apocalyptic world, meanwhile considering how best to prevent or moderate potential long-range threats. In addition, by involving adolescents with real-world problems that are more relevant than almost anything else they could learn about, and by empowering them to deal with these actual challenges, this program could be a partial substitute for the initiation rites that our culture is so sorely missing.

Such a course could combine scouting and wilderness survival training, ecology, Red Cross emergency first aid, information from *The Mother Earth News* and the *Whole Earth Catalog*, geography, critical thinking, the scientific method, appropriate technology, and much more. Here is a partial list of possible topics, workshops, or resources: how to make fire, how to purify water, first aid, what is the minimum amount of water an individual needs per day, how long can a person go without food, providing infant care in emergency conditions, foraging for food, methods to resolve conflicts and ethical dilemmas, and the basic procedures to follow in floods, fires, tornadoes and hurricanes, earthquakes, heat waves, blizzards, toxic chemical releases, radioactive releases, and civil unrest. More than one website gives relevant information, such as IntheWake, "A Collective Manual-in-progress for Outliving Civilization."

Students might consider questions such as the following. Do disaster movies provide a good model for how to act in emergencies or live in primitive conditions? Do reality shows? Do science fiction stories? How do the media treat environmental disasters? Let students survey a few environmental disasters from recent decades, then research and discuss how the world handled them. How many environmental and other refugees are in the world, where are they, and what happens to them? Who is responsible for taking care of them? Who should be responsible?

Add these: stone tool-making workshop, community gardens, roof-top and vertical gardens, food combinations that make complete proteins, how to make a solar still to purify water, solar cooker workshop, how to compost garbage, how to convert a car to other fuels, how to reach consensus, how to deal with a bully, how to brainstorm new ideas.

The course should also discuss longer range issues such as population pressures, climate change, nuclear weapons and disarmament, GNR technology, and visions of the future we want. For a senior or Advanced Placement course, see David Orr's list for ecological literacy.

In fact, the whole nation needs a crash course in how to design a sustainable future that involves understanding the principles of organization designed by communities of life (ecosystems) over millions of years. Physicist Fritjof Capra says human survival will depend on our ecological literacy. Mainstream media, film makers, public institutions such as PBS, universities, and libraries, and many politicians and business leaders have begun to disseminate and work with a number of concepts and terms important to our thinking about climate change and other urgent challenges, such as: tipping point, 350 parts per million, greenhouse effect, carbon footprint, ecological footprint, sustainability, unintended consequences, precautionary principle, ecosystem, biodiversity, and carrying capacity.

Capra lists the following as fundamental facts of life:

One species' waste is another species' food.
        Matter cycles continually through the web of life.
                The energy driving the ecological cycles flows from the sun.
                Diversity assures resilience.
                        Life, from its beginning more than three billion years ago, did not take *over the planet by combat but by networking.*

Widespread understanding of the true nature of life on our planet would likely send many of our ideologies and ideologues back into the mists of unknowing.

Chapter 7
The Places We Live

When plant and animal domestication began and fertile, watered river basins attracted growing numbers of people, a settlement pattern emerged, roughly 10,000 years ago, that is still visible on the map today.
~Harm De Blij, *The Power of Place*, 2009

Humans have long since settled every continent except Antarctica. Modern transportation and communication technologies can physically or virtually transport us anywhere on the planet. Yet we are still intensely local creatures and most of us are attached to our homes, our neighborhood, our town and region. For several years I lived alone in a cabin in the woods, and felt very strongly attached to my immediate territory, about three acres. A friend remarked that it seemed like a "second skin." I felt more powerful in that place and had a deep desire to protect it. For countless centuries that localism was the way we lived, it still is for billions of us, and we in the affluent world who jet about the world ignore the sense of place at our peril.

Harm De Blij, Professor of Geography at Michigan State University, answers the chorus of writers who insist that the world is flat or at least "flattening" because of globalization. By this they mean that the high-tech prosperity of the rich countries is becoming the norm everywhere, with disappearing borders and homogenized cultures. De Blij disagrees, saying that high-tech opportunity may be available for the fortunate minority but not for the much more numerous poverty-stricken members of our species. For instance, De Blij contrasts the high-tech industries growing around Bangalore, Delhi, and Calcutta, attracting hundreds of thousands of trained workers, with tens of millions of landless peasants in more remote areas of the lower Ganges Basin. Similar contrasts are evident in China.

Or one hears about the great economic success of Botswana, with high economic growth rates year after year. Then one finds out that half the country's GDP depends on diamond mines, operated by foreign companies, while a majority of the people of Botswana live in dire poverty. De Blij says global elites "flatten playing fields for each other as they traverse the world." The First World decision-makers of government and industry, whom De Blij calls *globals*, control the fates of *locals*, people who have lived on the same land or in the same villages for generations. Furthermore, the related trend of urbanization is sending poor-country peasants into enormous cities (megacities), many eventually expected to number 50 million or more.

Disparities between the rich countries (the 'core') and the poor countries (the 'periphery') are "so evident" says De Blij "that no flat-world or melting-pot postulations can wish them away." The core of rich countries contains 15% of world population, and controls almost 75% of gross national income, while the periphery has 85% of population with 25% of income. Globalization hasn't changed these "staggering situational differences." From the viewpoint of individuals trying to get ahead economically and adopt the core culture of the rich nations, geographical place may seem like a burden. De Blij says the future depends on the evolving relationships between the global elite and the much more numerous locals.

At this writing it is not clear how the world-wide economic collapse may affect the process of globalization. Nor whether it is possible to reverse the course of flattening, which provides prosperity for a minority at the cost of perpetuating economic injustice, depleting resources faster, polluting more areas, and homogenizing more cultures. But economic globalization is an

unsustainable course, and does not fit the ancient traditions and wisdom of the human race. Let us put forth a different vision and plan of action.

Reinhabiting the Earth

One could spend a lifetime learning a small range of mountains, and once upon a time people did.
~Bill McKibben, *The Age of Missing Information*, 1992

Instead of thinking of ourselves as owners of Planet Earth, let us note that the turtle family, the hummingbird family, the sharks, the frogs, in fact most families have resided here much longer than we have. We are newcomers, or guests. Guests are not supposed to inconvenience their hosts or impose on them, and they should clean up after themselves. Yet we humans in the industrialized nations have this enormous footprint, which in terms of guest etiquette, is like leaving the biggest, greyest ring around the bathtub you could imagine. Above all, guests are not supposed to displace their hosts. ("Too bad, go away, is my house now.") Yet we're not aliens on the Earth, either. We need to make ourselves feel at home without taking our hosts for granted or getting rid of them.

Several perspectives can help restore our true relationship in nature, raise species consciousness, and keep our special kind of semi-thinking creature from tearing up the planet to the detriment of ourselves and everything else. These include the human scale, bioregionalism, a sense of place, and reinhabitation.

First, consider our inherent tendencies to form groups of a certain size, while feeling uncomfortable in larger ones. A sense of human scale is so basic that we seldom think about it. By continually growing our numbers and crowding together, we are in danger of losing the necessary links of connection and mutual helpfulness. We will understand ourselves a great deal better and make better choices by being aware of this need. Scale also relates to the human-constructed world of buildings and roads, to economic activities, and to politics.

Next, a bioregional view puts us in relationship with everything around us, part of the ecosystem. We look, really look (and hear, and smell) where we are, how the seasons change, where the waters flow, and who or what lives around us. A sense of place is a little more personal and includes more of humans and history, as well as the natural world.

Reinhabitation suggests that we truly settle in to that corner of the world where we live, understanding how we are part of it. Even in urban areas many are working to turn their communities into green cities. Start with the children, who thrive in nature. They need to grow up whole and capable of maintaining the sustainable world that (hopefully) we will provide them. A number of movements and countries are involved in different forms of green education**.**

The Human Scale +++

The Beanstalk Principle: For every animal, object, institution, or system, there is an optimal limit beyond which it ought not to grow.
~Kirkpatrick Sale, *The Human Scale*

An aspect of life that we tend to ignore is how size changes everything. This was brought home to me dramatically by a famous mime appearing in our town. In one skit he performed a

dental extraction on an invisible elephant. Watching him climb around the 'elephant' or brace himself to pull an unseen tooth the size of a boulder gave a whole new dimension to dentistry.

Scale applies to size, numbers, or measurable conditions. Things can change drastically when they get to a certain point on the scale. When water molecules are moving just fast enough they turn to steam, or just slow enough they turn to ice. We refer to 'critical mass' and to 'tipping points' when something is big enough or conditions have advanced enough so that its nature changes to something else.

With living things, collectives have different traits from individuals. Physician and science writer Lewis Thomas says that social animals when in groups become "qualitatively different" from when they are alone or in pairs. For instance, groups of termites become friendly and active, touch each other incessantly with their antennae, and cut down on their water intake. Isolated, they are aggressive and aloof, and begin drinking compulsively.

Humans also behave differently in collectives. Ernest Callenbach, ecological planner and writer, notes: "We are medium-sized animals who naturally live in small groups—perhaps 20 or so—as opposed to bees or antelopes who live in very large groups. When managers or generals or architects force us into large groups, we speedily try to break them down into sub-units of comfortable size." But what if we can't? Compare today's seven billion human Earth-dwellers to the million or two who lived in the Neolithic. Today's masses not only impact the Earth to a much greater degree, but when other humans are around every corner, we have a qualitatively different sort of relationship with our own kind.

It is folk wisdom that several children playing together will take risks and transgress rules that one child would not. People act differently in groups, especially when in chaotic situations such as riots or warfare. On the other hand, people who live in crowded countries such as the Netherlands usually learn how to be more civil to their neighbors, because they have to.

Size matters even in the realm of the inanimate. The FDA has a key role in overseeing the development of nanotechnology, the production and manipulation of materials at the molecular or atomic level. A factor complicating regulation is that the same substance may demonstrate quite different properties at the nano scale. For example, gold that is one nanometer in size is blue and mildly reactive. At three nanometers it is reddish and acts like a catalyst. At the scale of a gold coin the substance is yellowish and inert.

Biologist J.B.S. Haldane noted that "Just as there is a best size for every animal, so the same is true for every human institution." In *The Human Scale*, Kirkpatrick Sale looks through history and prehistory for the optimum size of human institutions from committees (not over 10 people) to cities (50,000-100,000).

The term 'human scale' was first used in architecture and city planning to describe buildings whose proportions satisfy certain psychological and aesthetic human needs. It obviously does not apply to skyscrapers of ever-increasing height across the world as cities compete for global prestige. The most recent entry is the Burj Khalifa in Dubai at 2,723 feet. China and India are having skyscraper construction booms, but analysts at Barclays Capital in Hong Kong say that historically there is an "unhealthy correlation" between construction of tall buildings and impending financial crises.

Bigness is one of those supernormal stimuli/advertising values. We tend in American culture to value bigness for its own sake. Yet the value of 'big' argues for centralization, large nations, large corporations, monopolies, large institutions (and therefore, ipso facto, bureaucracy) as well as many other consequences of such bigness, such as concentration of power and inflexibility. Large companies are supposed to be good in economic terms (economies of scale). However,

Sale quotes economist Barry A. Stein with a contrary message. Stein says that studies of productivity show the highest efficiencies tend to occur in factories of moderate size (fewer than 45 employees) and that "There is a declining relationship between productivity and size."

Indigenous peoples do not value bigness the way industrialized people do. Chief Joseph Nez Perce said with intuitive understanding: "The Earth and myself are of one mind. The measure of the land and the measure of our bodies are the same." Leopold Kohr, 20th century Austrian political philosopher came to a similar conclusion: "Whenever something is wrong, something is too big."

Bioregions

> *...before we plow an unfamiliar patch*
> *It is well to be informed about the winds,*
> *About the variations in the sky,*
> *The native traits and habits of a place,*
> *What each locale permits, and what denies.*
> ~Virgil, Roman poet, 70-19 BC

A *bioregion* is defined as the unique pattern of natural characteristics found in a specific place: terrain, climate, landforms, watersheds, soils, and communities of native plants and animals. For instance, I live in the Ozarks, a bioregion distinguished by its hilly topography, thin rocky soils and porous sub-soils, oak trees and animals such as squirrels and deer that partly subsist on acorns. This bioregion crosses the border of two political state boundaries, Arkansas and Missouri, reaching a bit into Kansas and Oklahoma. There are smaller ecoregions, and even small eco-niches in one's own yard, such as a low or boggy area where certain plants thrive. There are also biogeographical regions that cover large parts of continents.

Bioregionalism is a non-political movement based on this intimate geographical knowledge, deep ecology, and respect for 'the old ways', traditional knowledge, and indigenous knowledge. It supports decentralism based on ecological boundaries and traditional patterns of living. Bioregionalism easily coexists with green politics, for instance, the Green Party of Alaska is organized bioregionally. Peter Berg, who coined the term to help define a new perspective, says that people are integral to the life of a place. One needs to see the bioregion as the basic location where people live, where early inhabitants developed cultures adapted to their place, and where current inhabitants try to harmonize with their place and find sustainable ways to live there. Berg says a bioregion is "both a geographic terrain and a terrain of consciousness."

In every part of the world, every large biogeographical province and bioregion down to the smaller hunting territory of the clan or the village, people made their lives out of the earth's offerings in the texture of that place. Their home territory not only provided food and shelter, but it was art, knowledge, and spirit. So they hunted the animals that lived there and gathered the nuts, fruits, grains, roots, and leaves that grew there, later cultivating a staple in rice, wheat, corn, or cassava. They built homes from their place, of wood, stones, mud bricks, or blocks of snow. As they formed the first towns and cities, they almost invariably sited themselves next to a river, an ocean, or a large lake, as water was needed for drinking, bathing, watering livestock, irrigating crops, and transportation in order to trade with other groups or find wives.

We in North America have a variety of violent weathers, and depending on where we live we know about thunderstorms, tornadoes, floods, blizzards, and hurricanes. Or maybe we grew up

with earthquakes, wildfires, and hot Santa Ana winds. Few of us in the United States truly understand what it is like to live near a volcano that mutters for centuries, or with monsoons, or in the intense heat of Calcutta or Leopoldville; or how to live in a desert, that is, to live *from* the desert, without green lawns irrigated from remote lakes and air conditioning powered from distant factories; or on the endless tundra, or through the long and dark winters of Scandinavia and Siberia and Canada's far north.

Even where steel and concrete cover up the earth, ailanthus trees and other indomitable weeds poke through the cracks of our sidewalks. Pigeons, starlings, sparrows, and an occasional robin, jay, or mockingbird find their niche. Mice, rats, cockroaches, ants, and dust-mites are ever-present human companions, pests and parasites it is true, and many of them non-native species, yet asserting the presence of something besides sapiens, sapiens everywhere. For we are not really interesting enough to make a world out of nothing but ourselves, even if we were able to survive in such a hall of mirrors—which we are not.

The Durants say "Geography is the matrix of history, its nourishing mother and disciplining home." Cultures grow from their places, their bioregions, and are set into them like the jewel-green moss and the silvery minnow of a mountain stream are set into theirs. One's bioregion is not only food, shelter, weather, and mineral resources; it is also the moods of sky, lake, and sea, the configurations of the special trees that grow in your place, the kinds of breezes and winds—how they sound, when they blow, and how the trees or daisies or dead grasses move with them—the springs which gurgle from the side of a hill or mountain to feed the creek, which feeds a larger creek, which feeds a river, which feeds a larger river, and how those creeks and rivers overflow in the spring rains, moving rocks; then the rocks themselves, where they come from inside the hill, how they break, what fossils they hold, the lichens which grow on them, the caverns and bluffs, the fox's den, all these and much more were part of us in the past, for several million years, and part of us now, of people who live in a place. These are the springs of human expression, as well as of human survival.

By re-inhabiting a place, observing it, learning about it, enjoying it, you will gain a certain power. People have described this as a deep calm, a sense of belonging, being centered or grounded, or finding home. From this home you can act in the world with more sureness. +++

Green Cities

> *It is forbidden to live in a town that does not have a green garden.*
> ~*Jerusalem Talmud*, Tractate Kiddushin

Most of us now live in urban areas and do not have much opportunity to visit a wilderness. But movements are growing that involve architects, urban planners, politicians, and many ordinary citizens, to make cities greener, more habitable, and more sustainable. This green urbanism movement is growing both in Europe and the United States, with the philosophy that if the city is where we live, let us become native to it. Let the city be a true home for this human species which developed in nature and still needs those roots. +++

First we need some reason to identify with a place and to make it a true community. Urban areas need parks, living ecosystems and bodies of water, historical sites, and other meaningful landmarks to overcome the soul-deadening monotony of ticky-tacky suburbs and highway culture. Architect Timothy Beatley in *Native to Nowhere* says that the lack of meaningful public places, the sameness and anonymity of so many cities and towns, leads to apathy and alienation

from one's community and from political participation in it. In contrast, he gives examples of communities that "provide healthy living environments and also nourish the soul—distinctive places worth of our loyalty and commitment, places where we feel at home."

Every city where I have lived or visited has varying numbers of these memorable places. In San Diego, Balboa Park—a large park that includes a zoo, gardens, a number of museums, and a theater replicating the Globe Theater of Shakespeare's time—seemed like the heart and soul of the city. Beatley emphasizes the importance of "building on the unique and particular histories of places." For instance, in Germany the huge Landscape Park Duisburg-Nord is built on and around industrial ruins.

In the small city where I live now, the spacious new library that was designed as a green building is a meeting place, a matter of pride. It has attracted far more patrons than it did before. Our town's growing system of pedestrian/bike trails is another distinction, currently between 17 and 18 miles, with a goal of 129 miles. One major aim of green urbanism is to make cities pedestrian-friendly. People can then enjoy memorable places close-up and at walking speed. Many U.S. cities such as Portland, Oregon and Oakland, California have pedestrian master plans.

Fred Kent, founder of Project for Public Spaces, describes a commons as a public space where people gather and build community. Since the mid-1970s, the PPS group has worked with over a thousand communities world-wide "to help grow public spaces into vital community places." Some of Kent's favorite commons are the Luxembourg Gardens in Paris; Pioneer Courthouse Square in Portland, Oregon; Campo Santa Margherita, a square in Venice; Central Park in New York City; and Coyoacan, a plaza in Mexico City. Kent says most such successful commons share certain traits. They are at the hub of city life and offer many activities, including people-watching from outdoor cafes or at public markets. They are easily accessible on foot, by bicycle and public transit, as well as by car. They are safe and clean, with amenities such as places to sit, restrooms, and waste receptacles. Most of all, they have visual and sensual attractions such as shade trees, fountains, and public art.

In a bad economy some see public parks as a luxury, others as a necessity. Research backs the latter. A Dutch study found that people living near a green space had lower rates of 15 out of 24 diseases and were much less likely to suffer from depression and anxiety disorders. Kari McGinnis quotes the director of Portland Parks, Charles Jordan, about another reason some places are important. He says Pioneer Courthouse Square is "a cultural crossroads where the city's diversity is there for all to see. Green-haired street kids rub shoulders with business types in three piece suits. It may make some people uncomfortable, but parks are the most democratic pieces of land we have."

Although England invented the public park in 1843, and once had the best parks in the world, today many parks in the UK are neglected and rundown. Other countries are investing more in their parks, with some shining examples in Curitiba, Brazil and Melbourne, Australia. Every piece of property in Melbourne, whether residential, commercial, or industrial, pays a parks charge to support green space. After Curitiba had a huge growth in population in the 1970s, the city put four percent of its budget into creating green spaces. Curitiba is now an international model of urban management, and Melbourne was recently judged by the *Economist* to be the world's most livable city.

However, plazas and parks are still not enough. In addition to green growing things, a number of wild creatures live in urban areas, moving in as their habitat is destroyed. Interactions between humans and animals in this unnatural setting are sometimes difficult ones, but we could make them more positive. Jennifer Wolch, director of the Sustainable Cities Project, says to

imagine your city as a "zoopolis." One person putting this into effect is artist-engineer Natalie Jeremijenko, who works with cutting-edge architecture firms to design urban systems that can accommodate birds as well as humans and facilitate communication between humans and birds. Another example is the construction of a new sports center in Banbury, UK with bat tubes and swift bricks to provide nests and roosts for nearby creatures.

In one surprising example of neighboring with animals, New Jersey is restoring and promotes ecotourism in an area that begins just five miles west of Manhattan called the Meadowlands. The area is home to twenty-six species of birds that are endangered or threatened. Forty years ago, the thirty-two square mile Meadowlands smelled rotten and seemed dead, but gradually after the Clean Water Act of 1972 the animals began to return. Today the Hackensack River (which bisects the area) has almost 100 species of fish and shellfish and 200 bird species including bald eagles on their migratory stopovers.

Much more than planting a few petunias, real greening considers the city as part of a larger, regional ecosystem. In the Puget Sound area, the new "Cascade Agenda" is described by Neil Peirce as a 100-year conservation and preservation plan for 2.6 million acres:

> The focus is first on channeling growth into denser, well-planned cities, second to save rural lands by a massive new market-based transfer of development rights initiative, and third, with expanded greenery, to create a significant "carbon sink," forests that absorb carbon dioxide emissions.

In similar fashion, Philadelphians have formed the Schuylkill Action Network or SAN, to address the 100 miles of river upstream, with its potentially polluting farms, factories, and mines. In Philadelphia's Office of Watersheds a group is working to catch and filter storm water naturally. In Los Angeles, community groups and individuals have organized to bring back an important but degraded ecosystem. This large alliance of people, which Jennifer Price calls a "vast and probably unstoppable conglomeration, [is set] to restore the [Los Angeles River system] to something more than a ditch." Restoring a river system not only enhances the environment but also provides a focus for the people who live in a city.

The city of Chicago under Mayor Richard Daley has set a goal to become the greenest city in the United States. Chicago had a head start because of the vision of people over a century ago who developed the Cook County Forest Preserve and established it by law in 1913. Today an initiative called Chicago Wilderness involves over 160 environmental and community organizations that research the existing biodiversity, educate the public about it, and work to preserve and restore it. Their 2004 strategy plan, the Chicago Green Infrastructure Vision, aimed to protect and restore almost two million acres, according to Hendrickson.

An editorial by Peter Crane and Ann Kinzig in *Science* points out the importance of nature in cities for an increasingly urban population: +++

> What remains of habitats and biodiversity within the city is of disproportionate importance….these may also be of national or even global significance. Sao Paulo, Brazil, contains important fragments of the Atlantic Rain Forest [while] significant remnants of the unique Cape Floristic Province persist within and around Cape Town in South Africa. Even in London, there are still superb opportunities to connect with nature, from the restored wetlands of Barn Elms to the acid grasslands of Richmond Park….Nature in the metropolis needs to be nurtured, not only for its value now, but even more for its importance in the future.

Vertical Gardens +++   In ancient times, one of the Seven Wonders of the World was the Hanging Gardens of Babylon. With city real estate at a premium, this Wonder is returning with the idea to plant gardens upward and make living walls out of city buildings. A French botanist, Patrick Blanc, is credited with inventing the modern plant wall: a fibrous material is anchored to the wall and plants such as moss, succulents, and vines are rooted in it, while water trickles down between the sheets of fiber. Blanc uses a similar technique on indoor walls and has even experimented with plant ceilings. In an interview Blanc says, "We live in an era where human activity is overwhelming. I think we can reconcile nature and man to a much greater degree."

This creative idea is spreading rapidly across several continents. One variation is the Folkewall, designed by Folke Gunther in Sweden, which grows annual food crops while simultaneously purifying greywater. Two Japanese companies, Shimizu and Minoru, co-developed and are marketing a lightweight wall greening system based on panel units. Another company, ELT, makes "Living Walls." However, Blanc's gardens are not made with engineered panels but with felt sheets. He uses only plants that grow in the wild on rocks.

The vertical garden has at least five potential benefits. First, artists such as Patrick Blanc create public art from living plants and turn cities into ever more beautiful and distinctive places. Some famous buildings with vertical gardens are in Blanc's home city of Paris such as Foundation Cartier, the department store BHV Homme, and the Musee du quai Branly. Other famous sites are in Bangkok, Madrid, Melbourne, Sydney, New York, and Anjo City, Japan. The largest green wall in the U.S. is in Huntsville, Alabama for the clothes retailer Anthropologie.

The second potential benefit of living in a city that is literally green is psychological. Our species evolved to live in nature, and in natural settings people tend to be calmer and more positive. (Any shift in behavior could be measured scientifically.) A related idea is green roofs, which are installed primarily for energy savings but may also be visible from other locations, adding beauty. Some large, innovative green roof projects are the California Academy of Sciences, the Apple Store in Chicago, the Singapore Polytechnic school of Art and Design, and Waldspirale, designed by Austrian architect Friedensreich Hundertwasser.

Third, added shade from green leaves helps to cool buildings in summer and insulate them from cold winds in winter. Marq de Villiers says a Minneapolis study found that increasing the acreage of a city's parks by only 10% could change the local temperature by a full degree, and he suggests that green roofs [or living walls] could add to that effect.

Fourth, living walls can help clean city air pollution. As various house plants purify indoor air, so the larger expanse of green-growing buildings could support healthier breathing in urban streets. Also, additional vegetation can help counteract CO_2 emissions that contribute to climate change. In a sixth possibility, citydwellers could grow fruits and vegetables not only on building walls, but in or on skyscrapers called 'sky farms,' described later on.

Urban Sports and Games: The natural creativity and exuberance of urban youth continually give rise to new expressions such as break-dancing or graffiti art. These arts and skills can be positive ways for young people to make human habitation out of an artificial landscape. One way to re-inhabit the urban landscape is *Parkour* or free running, a physical discipline that uses the possibilities of the human body and mind to overcome obstacles and get from point to point in the most efficient way. This may involve running, jumping, climbing, vaulting, and other movements. Those who practice it, called *traceurs* or freerunners, are most often urban males in their late teens and twenties.

The sport has spread to most European countries, United States, Canada, Japan, and South Africa. Parkour somewhat resembles self-defense in the ancient martial arts such as *aikido* and has no formal rules or competitions. Victor Bevine, a co-founder of the World Freerunning and Parkour Federation (WFPF) notes that it is much safer than other extreme sports.

Jaclyn Law notes that Parkour "incorporates a deeply entrenched sense of community that sets it apart from other sports…There is a genuine all-for-one ethos among traceurs—they welcome beginners, push each other to new heights (physical and otherwise) and hang out at each others' homes. They also stop each other from taking stupid chances." Besides the physical grace and community spirit it engenders, Parkour could serve as an adolescent rite of passage, an alternative to gangs for inner city kids. Other benefits are parkour's intimate connection with and knowledge of the spatial landscape, both natural and man-made, and cultivation of direct awareness and observation skills. Freerunners could be of great help in urban emergencies and in search and rescue missions. Their skills are useful in an urban game such as Commons, in which players report problems or recommend improvements in specific neighborhoods.

Urban gaming or location-based games is another recent trend. Urban games take place in public spaces and may mix interactive media, art installations, performance art, live action role-playing, and digital devices such as cell phones, digital cameras, and/or GPS devices. The city itself is repurposed as a game platform, and the boundaries between virtual and reality are blurred in 'pervasive games' (games pervading the environment).

You might ask what all this has to do with species survival? Art and play can better acquaint us with the full potential and problems of our ubiquitous digital technologies. Urban gamers, like cyclists and pedestrians in general, help take possession of city streets which in the United States, at least, are mainly relegated to the internal combustion engine. People together on city streets form an interacting community unlike those isolated in SUVs and suburban homes. +++

Then there's street theater, which has ancient roots. In one recent manifestation, Occupy Wall Street activists, citing the example of the gambling industry, carried giant bags of cash (play money) worth $2 million as a bribe to Gov. Cuomo to raise the minimum wage. Participants said that raising minimum wage from $7.25 to $8.50 would benefit 700,000 New Yorkers. Adbusters—the godparent of OWS—reports that the original Zucotti Park model is morphing into a multitude of more spontaneous "flash encampments" such as Occupy the Farm (crops and chickens on an endangered piece of agricultural land) and Occupy Homes (preventing foreclosure evictions). Edmund P. Fowler of Transition Towns says that the Occupy movement has drawn public attention to the importance of place:

It doesn't take long to set up kitchens, a central square, health services, bathrooms, and rudimentary ways of making collective decisions….Proposals for change are no longer abstract. They are practical, immediate, and effective. So the next step should be obvious. The same intelligence used to create working communities to occupy Wall Street can be used to recreate working communities in urban neighborhoods and rural towns across the continent and across the world.

Ellen LaConte adds that occupiers are modeling how to function in "post-global, post-carbon, cooperative, democratic communities." She says that in order for occupier efforts to outlast the occupations, they will need to make the shift from setting up camp to becoming native to place.

Note also an international subculture of 'guerrilla gardeners' who decide on their own to improve public spaces. They don't ask permission or write grants, but just go under cover of night (or sometimes in broad day) to plant wildflowers or carrots along roadsides or on some abandoned vacant lot or median strip. +++

Chapter 8
Green Education

Teaching children about the natural world should be treated as one of the most important events in their lives.
~Thomas Berry, cultural historian and ecotheologian, 1914-2009

Children are drawn to nature; it is their natural habitat. Young children are born animists who find everything around them alive and exciting. They absolutely need to experience this phase of development before society imposes its materialistic worldview. I recall the avid curiosity of my older grandson whom I cared for while his mother worked. Not yet two, he was fascinated by the small isopods called 'roly-polys' (because they like to roll up into a ball) which were living around plants on the patio. He handled them quite gently and studied their motions for long periods of time.

Medical professor Donald E. Wieklinski says many nature-deprived American children today are not mastering nature literacy. For instance, they literally cannot see the difference between a bee and a wasp. (I have met young adults who grew up in a rural community but couldn't identify common birds such as robins and blue jays.) Wieklinski points out research that documents the salutary effect of natural settings and outdoor activities on human mood and motivation. Also 'attention restoration theory' or A.R.T. research shows that involuntary attention restores voluntary or directed attention.

We may also mention that if children grow up without direct experience of nature, they will not understand how our species depends on the natural world and consequently they will not be ready to prevent the failure of ecosystems. As Robert Michael Pyle said, "What is the extinction of a condor to a child who has never seen a wren?"

Richard Luov in *Last Child in the Woods* worries that children growing up today in the United States will not have that direct connection with nature that previous generations have enjoyed. He notes several new trends, most of them troubling, that affect children's relationship with nature. One is the mental separation from our food's origins (the "food comes from the grocery store" myth). Another trend is "the end of biological absolutes." As ideas such as genetically engineered chimera or cyborgs permeate the culture, the animate and inanimate merge. A third trend is that while there is increased intellectual understanding of human's relationship with other animals, there is less direct experience of nature or participating consciousness. Luov says "Nature has disappeared from the classroom, except for discussions of environmental catastrophes." While direct experience of nature is essential, we often frighten children of elementary age by telling them too soon about the challenges facing our species.

Another trend is reducing our children's playtime. In the United States we have become increasingly anxious about our system of education. Children are tested continuously; some schools have already given up recess, and others are talking about year-round instruction. The Alliance for Childhood says that many kindergarten classrooms include no playtime at all, replaced by direct instruction and standardized testing. Edward Miller and Joan Almon say in *Crisis in the Kindergarten* that imposing unrealistic standards on young children leads to false labels such as "misbehavior, attention disorders, or learning disabilities" and "could well damage the intellectual, social, and physical development of an entire generation."

In contrast, let us look at Finland, which consistently scores at or near the top in international tests. Children do not enter school in Finland until they are seven years old. Finland spends less

per student than does the United States, gives teachers wide freedom to design their programs, and promotes free play. Children spend fewer hours in class than those of any other European nation. At a typical elementary school, according to Luov, children study a lesson for 45 minutes then play outside for 15 minutes. Forget homework—even in high school, a half-hour of homework is the norm. Children in China and Japan also enjoy schooling based on play and experiential learning until second grade. +++

The notion that children of all ages should learn more and more facts and abstract knowledge, while playing less and staying indoors or in concrete cityscapes most of the time, is itself troubling. And much of that time indoors is spent in front of television and computer screens.

Another trend to which Luov draws attention is that a form of suburbia, rigidly controlled by community covenants and associations, has greatly reduced natural spaces for children to play compared to earlier suburbs. He says it has, in effect, criminalized natural play.

Yet another troubling trend is waning interest in America's national parks. Park advocates say that Congress for many years failed to fund adequate maintenance of the parks and the backlog is now $8 billion. The number of those who visit parks, hunt, camp, or hike has declined since the 1980s in Japan and Spain as well as in the United States. Researchers Oliver Pergams and Patricia Zaradic found "an emerging and fundamental shift away from nature-based recreation." This was most noticeable among children, who are increasingly sedentary and involved with electronic pursuits. Though chronically short of funds, some parks such as the Smokies are expanding and vitalizing their programs directed towards children. In fact, as many as 100 campaigns in North America are working to get children outside again. The Children and Nature Network ties them together and recommends media such as the documentaries "Mother Nature's Child" and "Play Again." +++

We have already given many of the reasons that direct experiences, and especially experiences in nature, are vital to children (and adults). People who grow up grounded in nature are physically and psychologically healthier and will make better decisions about matters that affect species survival. Let's survey some of the concepts, schools, far-sighted individuals, and organizations that are reintroducing nature to schools, playgrounds, neighborhoods and cities.

Green Schoolyards +++

I spent the summer traveling. I got halfway across my back yard.
~Louis Agassiz, Swiss American naturalist, 1807-1873

A number of landscape architects and child's play experts have adopted the 'loose-parts' theory of Simon Nicholson, an architect at Cambridge (UK). Luov quotes Nicholson saying that "in any environment, both the degree of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables in it." The more loose parts, the more creativity. Nature, of course, is much more variable than man-made landscapes.

Robin Moore, professor of landscape architecture at North Carolina State University, says that natural settings stimulate all the senses and help to integrate informal play with formal learning. Nature is not a luxury but an essential for healthy child development and intellectual growth. People of all ages need time and space to integrate what they learn, and where better than in nature, which was our acknowledged home for hundreds of thousands of years. To implement the idea of natural settings for children, San Francisco and the Bay Area set up a *Green Schoolyard Resource Directory* and a Green Schoolyard Alliance.

Lowell Monke describes one example of a schoolyard habitat, Lewis and Clark Elementary School in Missoula, Montana, the first in its state. Guided by a local landscape architect, much of the playground turned into a habitat with a variety of native trees and shrubs, a waterfall, a stream, a rock garden, and a butterfly garden. Students were also involved with the original designing. Monke says thousands of American schools are developing these innovative projects.

An international movement for schools to incorporate nature into their programs is variously called *environment-based, place-based, experiential*, or *bioregional education.* One such program in the UK, Learning through Landscapes, has improved at least one-third of that nation's schoolyards to include nature. This program inspired a similar one in Canada called Learning Grounds, and another in Sweden, *Skolans Uterum.* The Association for Experiential Education has spread to over thirty-five countries.

Safe Routes to School: In the United States, about 24 million kids ride school buses for an average one and a half hours a day. While urban busing was a contentious social issue a few decades ago, buses have long been used in rural areas, increasingly so as these schools are consolidated. Most of these buses are diesel with the hazards of diesel exhaust—asthma, cancer—as well as emissions that contribute to climate change. Buses manufactured before 1990 emit about 60 times as much pollution as those that meet EPA's 2007 standards. (Many of these polluting older buses are sold to third-world countries.) New or used buses can be retrofitted with either diesel oxidation catalysts or the more expensive but more effective diesel particulate matter filters that can reduce emissions from low-sulfur diesel fuels by as much as 60%.

City children, even first-graders, used to walk to school. I did, my children did. But automobiles took over the American cityscape, making that walk more dangerous. Now, only about one-fifth of American children walk to school. Side effects of this social change are more vehicle trips for busy parents, more gasoline consumption and pollution, and one more cause of childhood obesity. Here is the creative solution: the walking school bus. First popularized in Australia, now spreading in the United States, walking school buses are simply adult-escorted walks to school along a defined route. One or a few adults take on the responsibility to lead the group. Sometimes the city needs to construct a sidewalk, engineer traffic calming, or install special crosswalks and signals. Brian Fellows, who manages the Safe Routes program in Arizona, points out that the walking school bus is an "elegantly simple" strategy. One bonus is that children arrive at school energized by their exercise. Another is that they are closer to nature on the way. Bike trains are a similar concept for older children to bicycle together to school. +++

Green Schools: One-fifth of Americans—about 60 million individuals—are in school every day, most of them as students, but others as teachers and staff. School construction is an important economic activity that accounts for 27% of the U.S. construction industry. But many older and traditionally built schools have problems with indoor pollution and poor lighting. Conventional building materials and paints are often allergenic or toxic. According to reporter Samantha Cleaver, as many as 15,000 schools have poor indoor air quality, which can aggravate asthma, cause headaches, and spread airborne illness. In contrast, green schools are intended to save energy, to be more environment-friendly, and to be more child-friendly too, with more natural light and circulating fresh air. +++

There are indications that children are healthier and perform better in green schools. A 1999 study by a building-efficiency consulting company evaluated 2,000 classrooms in three cities, finding that students in classrooms with the most daylight progressed 20% faster in math and

26% faster in reading than students in classrooms with poor lighting. There's also evidence of less absenteeism in green schools.

Many school districts as they build new schools or additions are looking for LEED certification from the U.S. Green Building Council (LEED stands for Leadership in Energy and Environmental Design). Certification is based on a checklist of features such as using recycled materials or super-efficient air conditioners. The Green Building Council claims that LEED-certified schools use an average 33% less energy and 32% less water. Added construction costs pay for themselves in reduced energy costs over a period of perhaps a dozen years. For retrofitting school buildings that already exist, perhaps with roof coatings and other insulating material, a school district may earn an Energy Star rating from the EPA.

Ecoschools +++ A separate movement focuses on *ecoschools* which use nature studies as a key part of the curriculum. There are 2,800 such schools in the UK and Scotland alone, and the movement has spread throughout most of Europe and Russia, as well as to Australia and South Africa. By the end of the 2004/2005 school year, about fourteen thousand schools were participating worldwide in the organization that originated in the UK. Ontario EcoSchools has designed its own program in Canada. Luov predicts that "a major movement is possible—and not just in the United States and other post-industrial countries."

Luov notes that environmental organizations may play a role in ecoschools and nature programs, and mentions the Sierra Club's Inner City Outings. This community outreach program gives the opportunity for low-income, inner-city youth to go on wilderness trips. Luov calls for more such programs, with more coordination and links between various organizations and schools. He also suggests a revival of camps of the old-fashioned type that brought children to nature—not computer camps or others linked with school learning—and says that every school district should be associated with at least one "wildlife-and-childhood" preserve in its region.

One educational movement that is rapidly growing in Europe is *forest kindergartens*, with multi-age, year-round outdoor classrooms that foster a love for nature, first-hand knowledge about it, and a background for fantasy play worlds. Lowell Monke says a few forest kindergartens have started in the United States, and notes that "prairie weeks, pond months, or desert days can serve as well."

Unplugged Schools

We're using tools with unprecedented power, and in the process, we're becoming those tools.
~John Brockman, *Wired*, Aug 1995

Lowell Monke taught young people about computers for many years but eventually became disillusioned about society's infatuation with this technology. Monke says that school is about the only institution left that could offset the dominance of mediated experience over children's lives. "The health of our children's inner lives, their civic engagement, and their relationship with nature all would be improved if schools turned down the thermostat on that technologically overheated aspect of American culture." In similar vein, at the very beginning of the television era futurist Marshall McLuhan said that as media took over our lives, schools would need to become "civil defense against media fallout." Instead, they have become cheerleaders for computer technology.

Todd Oppenheimer notes (*The Flickering Mind,* 2003) that school is one of very few places where people can have a sustained conversation about something—he says we need to protect that space. The journal *Science* published important research, an analysis of 50 studies on learning and technology by Patricia Greenfield, professor of psychology at UCLA and director of the Children's Media Center. Greenfield concluded that in the transition from print to visual media our visual literacy has improved but our abilities to think, analyze, imagine, and reflect are threatened. "Technology is not a panacea in education, because of the skills that are being lost."

Natural Learning: While focusing on nature, let us not forget the nature of children themselves. John Gatto, a veteran teacher in New York City who has won several teaching awards is nevertheless quite outspoken about the deficiencies of public education. He says, "It is absurd and anti-life to be compelled to sit in confinement with people of exactly the same age and social class. This effectively cuts children off from the immense diversity of life and the synergy of variety." Gatto says that most schools are too big; children don't have enough private time to develop meaning for themselves, yet the whole point of education should be to help children become their own teachers. Some ways he suggests to reform schooling are: independent study, community service, adventures and novel experiences, a variety of apprenticeships one-day or longer, and more inclusion of families. +++

Answers do *not* lie in attempts to force public education into a business model, to emphasize competition at every level, to crush creativity and critical thinking by defining all learning through standardized tests, to set up charter schools when they are used to circumvent the separation of church and state (or desegregation), or to promote home-schooling as a way to create a separatist society of fundamentalist Christians. (However the majority of those who pursue home education have other reasons for their choice, according to a survey by *Home Education* magazine.)

Chapter 9
Before and After History

Ye are the fruits of one tree and the leaves of one branch.
~Baha'u'llah, founder of Baha'i faith, 1817-1892

We can't know *who we are* without knowing where we have been. The whole human species has a history, if you will allow something to be called history that was not all written down in words. Much of our species history is recorded in old bones, spear heads, shards of pottery, cave paintings, and DNA, a fascinating story with some gaps and mysteries.

Human-like individuals are older than previously believed. Working in Ethiopa's Afar Rift, which has yielded many hominid fossils, paleoanthropologist Tim White of the University of California, Berkeley, says "We now have hominid remains dating as far back as 5.7 million years." Not all of these hominids were direct ancestors. The human heritage is not one straight line. As many as twenty different hominids have existed, often several at the same time.

Two million years ago our possible ancestor *Homo habilis*, first of the *Homo* genus, emerged in Africa. Archaeologists named this hominid the skilled man, because of his tool-making. Tools are even older than those ancestors whom we consider fully human. The next arrival was *Homo erectus*, standing with straight leg bones, a million and a half years ago. *Homo erectus* was "Java man," "Peking man," and "Heidelberg man," fine hunters who controlled fire for the first time and made hand-axes said to be unnecessarily beautiful in their design.

By a million years ago, early hominids had developed into several species such as *Homo habilis*, *H. ergaster*, *H. rudolfensis*, *H. erectus*, *H. neanderthalensis*, *H. sapiens*, and most likely, *H. floresiensis.* Four of them became distinctly human—Neanderthals, modern humans (H. sapiens), the 'Hobbit' (H. floresiensis), and the mysterious Denisovans. We learned about the existence of the last two cousins only within the last decade. Advances in DNA sequencing show that today's non-African humans share about 3% of our DNA with Neanderthals, and that Melanesians and Australian aborigines share about 5% of DNA with Denisovans. Little is known about Denisovans, related to Neanderthals. Their bones were found in a cave in Siberia

From analysis of Neanderthal mitochondrial DNA the common ancestor of the Neanderthal and modern humans is dated around 465,000 to 600,000 years ago. Neanderthal is clearly human. Neanderthals were skilled hunters and craftsworkers, used fire, buried their dead, cared for their sick and injured, and had some kind of language. They probably had clothing of skins they laced or sewed together.

The 'Hobbits' were a very small race of human creatures—about a yard tall—whose remains were discovered in 2003 on an Indonesian island. Despite their small brain size, they made stone tools and exhibited other human attributes.

Hominids or humans, they all died out except our line. Neanderthals disappeared only about 30,000 years ago, the 'Hobbits' even more recently (between 13,000-18,000 years ago). We are fortunate and perhaps uniquely qualified to be the surviving species—and yet the extinction of all those others may give us pause. Our fascination with these other human species, some of which coexisted with our own, is tinged with the subconscious fear or guilt that our ancestors may have contributed to their demise.

A recent PBS documentary, "The Journey of Man," traced early migrations of humans out of Africa, perhaps from the ancestors of the San people, from about 60,000 years ago: first to Australia, then the Middle East, Central Asia, Europe, Siberia, and the Americas. Geneticist

Spencer Wells heads a team of scientists collecting thousands of DNA samples from people in all these places, trying to trace mankind's history. They have looked for a specific form of the Y chromosome that is present only in males to find the patrilinear (male-descended) most recent common ancestor. This Y-chromosomal Adam, who lived between 90,000 and 60,000 years ago, is said to be the ancestor of all men living today. Although the scientists call him Adam, they do not consider this person to be the first human.

There is also an 'Eve' who is the matrilineal most recent common ancestor of all modern women, believed to have lived around 150,000 years ago in what is now Ethiopia, Kenya, or Tanzania. She was traced by mitochondrial DNA, based on the inheritance pattern of the cell nucleus, which passes from mother to daughter. But mitochondrial Eve was not the first human either. Other kinds of humans lived before, at the same time as, and even later than Y-chromosomal Adam and Mitochondrial Eve, but those other lineages died out.

Various tribes in Southern Africa whom white colonists lumped together as "Bushmen" carry the genetic codes for all of us today, whatever our race. This is our common human heritage, although these progenitor people can barely survive in the conditions of today. The descendants of Y-chromosomal Adam started to overspread the Earth 60,000 years ago, about 3,000 human generations during which we differentiated into various ethnic populations. Darker or lighter skins, slender physiques suited for a hot climate or short, thick ones suited for cold climates, all such adaptive differences evolved relatively recently (as scientists reckon time). Yet these variations have had an influence out of proportion to their significance. Jim Carnes, editor of *Teaching Tolerance*, points out the paradox:

> Human societies have evolved and clashed and fragmented as if our 99.9% shared inheritance didn't count for much. But against this dissonance, the idea of human oneness has persisted, like a biological memory. Religions enshrine it to varying degrees. Individuals grasp it through faculties such as empathy, love and conscience.

The unity of humanity is a spiritual understanding. Individuals can also grasp the idea of human oneness intellectually, becoming aware of the species inheritance as it is painstakingly put together by various researchers, learning the scientific facts about our common DNA and how blood-types are distributed across races.

Since our ancestor Homo erectus evolved, there have been perhaps 100,000 generations. In the long view, Species Consciousness includes all hominid species, alive or extinct. Let's be as inclusive as possible. Jared Diamond points out that what we call 'history,' focusing on only the last 5,000 years of advanced, literate Eurasian civilizations, leaves out 99.9% of the five-million history of the evolving human species. During almost all of that time, we were hunter-gatherers.

The Toba Catastrophe: Many scientists believe that about 73,000 years ago a supervolcano erupted in Indonesia, triggering an ice age and environmental changes that led to extinction of all the human species except three: Neanderthals, modern humans, and H. floresiensis. Toba was the biggest volcanic eruption in the last two million years and its ash blocked out sunlight for six years, dropping global temperatures by 28 degrees Fahrenheit. Drier conditions continued in India for at least 1,000 years. The lack of genetic diversity in humans today suggests that humans came very close to becoming extinct at that time. Humans who were our direct ancestors survived in East Africa but in relatively small numbers, creating a population bottleneck. DNA evidence suggests that 70,000 years ago there were no more than 1,000 to 10,000 breeding pairs.

After the climate became more stable, the human race once more began migrating to other continents.

A supervolcano has many times the explosive power of any eruption known in human history. For instance, the explosion near Lake Toba is estimated to have released energy between 3,000 to 10,000 times greater than that released by the 1980 eruption of Mount St. Helens and 40 times greater than the largest explosion ever produced by humans (a thermonuclear device detonated by the USSR in 1961). Lesser volcanic explosions have had effects on the global weather, for instance the 1815 eruption of Tambora in Indonesia caused "the year without a summer" in 1816. The eruption of one of the handful of supervolcanoes that exist on Earth today would plunge the planet into the equivalent of nuclear winter.

The Toba theory is supported by a good deal of evidence from genetics and geology, but is not yet accepted by all scientists. Its significance here is that our species apparently once faced imminent extinction but managed to overcome it. At that time, the injunction to "Go forth and multiply!" was highly appropriate and perhaps became imprinted in us. Today, facing a quite different array of threats, more directly under our control, we need a different set of injunctions.

Otherness

> *I'm OK, You're OK*
> ~Thomas A. Harris MD, title of best-selling book about Transactional Analysis

It is paradoxical that while humans have become so culturally diverse, we constantly make divisions between *us* and *them*, we conquer other people to show them the right way (ours), and we think up systems of ideas to prove our sort is better than their sort. Yet 'otherness' is a basic fact of nature. Sex was one of her early inventions. From Nature's point of view, the purpose of sexual reproduction would be to create more variability, more individual variations, and thus more opportunities to adapt to changing conditions. Nature loves diversity and so should we.

It isn't that difficult. Even primitive, asexual one-celled creatures are able to deal with otherness. There's me and there's not-me. The not-me could be food; it could be something nasty to avoid; or it could be simply debris to ignore.

More interestingly, for the slightly more evolved among us, the not-me could be another living creature, friend or foe or dinner, a potential mate or one's own progeny (to eat or not to eat?) So otherness is an old challenge on the tree of life, but only humans have managed to turn it into ideologies.

Racism and a whole host of other isms are simply based on otherness. Instead of emulating Nature's love of diversity, civilized humans keep making exclusive categories, trying to stamp out those different ones or use them as subordinates and tools, working to create monocultures and empires where one man or one nation can run as much of the world as possible and turn it into the image of the conqueror. Every one of us must consciously resist monoism, this human tendency to clone ourselves and reduce everything to one!

Original Peoples

> *Although we are in different boats you in your boat and we in our canoe we share the same river of life.*
> ~Chief Oren Lyons, Onandaga Nation

First Worlders may assume that only a few scattered tribes of original peoples are left on the Earth. In fact in 1997 there were about 300 million indigenous peoples, a number roughly equivalent to the population of the United States. Harvard anthropologist David Maybury-Lewis estimates indigenous populations as follows: almost three million in Canada and United States, 13 million in Mexico, 16 million in South America, 58,000 Inuit in Greenland and another 58,000 Sami (Lapps) in northern Scandinavia and Russia, 28 million in the former Soviet Union, five million in Arabia and the Near East, 20 million in Indonesia, 6 ½ million in the Philippines, 91 million in China, 60 million in South Asia, 14 million in Africa, 300,000 Maoris in New Zealand, and another million comprising the Ainu of Japan, South Pacific islanders, and aborigines of Australia.

The human rights organization Survival International has since its founding in 1969 campaigned to protect the rights of indigenous tribal peoples in 60 countries, especially their rights to land ownership. These rights—and often the very lives of the people—are threatened by cattle ranchers, government road-building and dams, nature reserves, game parks, and mining, oil, or logging companies.

Survival International estimates there are at least 70 uncontacted tribes, the majority of them in Brazil and New Guinea. These peoples, often numbering only a few hundred, have remained isolated from global civilization by choice. An example is the Sentinelese, a group of about 250 people who live on one of the Andaman Islands, officially part of India. They violently reject contact with the outside world, and India has stopped trying to make contact with them. Scientists estimate that the Sentinelese have lived on the same island for 60,000 years. Because their language is quite different from languages of other tribes in the Andaman Islands, it is likely they have remained uncontacted for thousands of years. They are thus considered the most isolated people in the world.

When such peoples are contacted, the greatest danger is that disease will decimate their tribe, because their immune systems are not prepared for the pathogens for which the rest of the world's inhabitants have developed immunity.

Indigenous Knowledge: Indigenous knowledge or IK means native ways of knowing. A community has intimate knowledge of their topography and weather, plants and animals, what is good to eat and what herbs can help stomach pains or wounds, how to tend livestock, and much more. Learning first by observation and by trial-and-error, people of the community pass on their knowledge in an oral tradition and as part of a vision of the cosmos. Their arts and songs, religions, languages, and whole cultures are woven around this kind of knowing. Our own ancestors were once indigenous peoples, but those of us in the industrialized world, no matter what our origins, have largely lost this sort of local knowledge.

It seems the wealthier we grow, the less we know. Researchers at the University of Essex found that increased wealth correlated with less knowledge of nature. Rural UK residents could identify 24% of local plant species, while rural Indonesians who earned about one-twelfth the income could identify 71%. Even among Indonesian villages, the wealthier ones could name far fewer species than neighboring villages with lower incomes.

Not only do these 300 million indigenous peoples have a great deal of knowledge about their varied bioregions, but virtually all of them developed cultural belief systems that included kinship with the Earth and complex rituals, ceremonies, and taboos designed to manage their

resources sustainably and keep ecosystems balanced. This is invaluable knowledge, but it is only preserved when people can keep their cultures intact and continue to practice what they know.

The advantages of ecological diversity are similar to those of diversity of cultures and languages. While scientists do not yet fully understood why, geographical areas of biological and cultural diversity tend to overlap. According to *Seed* magazine, these natural bio-cultural preserves are especially threatened by monoculture crops of agribusiness, by invasive species, and by increasing domination by a few languages such as English, Spanish, and Chinese. Deforestation and other forces also compel indigenous people to enter the cash economy and move to huge city slums, losing both their lands and their culture to everyone's detriment.

We cannot talk about indigenous knowledge without keeping in mind the two processes of colonization and globalization. Where it did not exterminate or enslave indigenous peoples, colonization deliberately or casually destroyed their cultures in the process of *ethnocide*. For instance colonial schools commonly taught native children using books and methods that reflected life in another country far away, and punished them for speaking their own languages. In some cases they were sent away from home and family to official schools teaching the conqueror culture. Globalization continues this process. The industrialized world considers the ability to read and write as the boundary between civilization and barbarism, so it discounts oral traditions. Globalization replaces complex cultures and arts with the pop culture of the First World, and lures younger members of the community into the cash economy.

First, we could introduce some humility into our Western world view. Ladislaw M. Semali and Joe L. Kincheloe, editors of *What Is Indigenous Knowledge?,* say that Western science is not the only legitimate producer of knowledge and "Different says of seeing can coexist." Cultural diversity adds to the adaptive health and creative possibilities of the species and its subdivisions. It is not to our long-range benefit to turn the world's peoples into clones of the   modern American or European. +++

Maybury-Lewis notes that everybody condemns genocide, yet world opinion advocates ethnocide as an appropriate policy, describing it as assimilation, civilizing, development, or teaching backward peoples how to live in the modern world. In *A New History of the Western World*, Robert Osborne discusses colonization of the Americas, a process that nearly exterminated the native peoples of the two continents and writes, "We are drawn to wonder whether the western way of thinking and of organizing human affairs makes us incapable of gazing on, and perhaps even learning from, another culture without needing to dominate and destroy it and make it part of the western system."

One such result of western dominance is shown in Zimbabwe where, a pair of scholars say, local farmers are much less food secure than they were two generations ago when they were forced to replace their sustainable indigenous system with a highly technical western system based on plowing and monocultures of commodity crops. Traditional agriculture used environmentally-friendly practices such as minimum tillage, mixed cropping, and fallow periods. Confining Africans to marginal land also contributed to agricultural decline.

By the 1990s, many indigenous peoples had organized themselves to protect their own survival. As of 1999, there were more than 50 growing networks of IK. Meanwhile, many scientists, resource managers, development organizations and governments were recognizing the practical and spiritual wisdom of traditional knowledge systems. The general public also needs to be more aware of the crucial role of indigenous knowledge preserved for centuries by peoples with belief systems supporting balance in nature.

We in the West could also help protect people's rights to their own knowledge, as in cases where indigenous knowledge (as of plants with healing properties) is being commercialized without participation by those who developed it. In 2007 the UN passed a Declaration on the Rights of Indigenous Peoples, recognizing their right to control their own territories. These territories hold much of the Earth's biodiversity and half of its untapped fossil fuels.

There are now dozens of Indigenous Community Conserved Areas where indigenous peoples manage their lands sustainably using traditional knowledge. As one example, the Kuna of Panama were able to maintain their geographic isolation and cultural independence despite many negative outside influences since their first encounter with Western civilization in 1920. The Kuna have an active political life, and were recognized by the Panamanian government as a self-governing region in 1953. When landless peasants encroached on Kuna land, the Kuna recognized that continued settlement would eventually destroy the tropical rain forest, so in 1983 they set up Kuna Park, about 60,000 hectares (150,000 acres) of virgin rain forest. Biologist Aislynn Griffin notes that the Kuna were the first indigenous group in Latin America to establish such a nature reserve. +++

Traditional Ecological Knowledge or TEK refers more broadly to traditional peoples, not necessarily indigenous, who have lived for some time in an area and developed their own practical knowledge of their environment and practices for managing it. According to the Convention on Biological Diversity, TEK is defined as the "knowledge, innovations and practices of indigenous and local communities around the world" developed from local experience over generations, orally transmitted, and collectively owned. Bioregionalism is a way to recover and preserve this local knowledge.

For the sake of the species, let us support all efforts to protect and preserve the world's indigenous peoples, respect their knowledge and ways of thinking, and preserve the world's languages as a storehouse of human creativity and survival adaptations. +++

Civilizations Cycle

History doesn't repeat itself, but it rhymes a lot.
~Mark Twain

Historians such as Spengler and Toynbee who have looked at the cycles of history—the birth, life, decline, and death of whole civilizations—find that history is ruled by organic laws of its own. Toynbee traced twenty-one civilizations, focusing on their inner dialectic of growth, decline, and disappearance. Often the decline of a civilization was linked with changes in climate or other environmental conditions. Sometimes these conditions worsened because of human activities, and in other cases humans failed to adapt to new conditions.

Ecologist Aldo Leopold, noting that animal populations have behavior patterns beyond the individual animal, wondered if similar patterns exist in our own species:

Do human populations have behavior patterns of which we are unaware, but which we help to execute? Are mobs and wars, unrests and revolutions, cuts of such cloth?...It is reasonable to suppose that our social processes have a higher volitional content than those of the rabbit, but it is also reasonable to suppose that we, as a species, contain population behavior patterns of which nothing is known because circumstance has never evoked them. We may have others the meaning of which we have misread.

Isaac Asimov's *Foundation* books—a science fiction history of the future—proposes that there are rules by which we can broadly predict what large masses of humans will do. Asimov's characters call this field of study 'psychohistory.'

The tradition that human experience is cyclical is stronger in the Far East and among indigenous peoples of the Americas such as the Hopi and Maya. Westerners, especially in the United States, tend to see history as one straight line of progress from savagery to the perceived towering superiority of today's society.

A great many biological phenomena recur in regular patterns, and some of these synchronize with other cycles. There are many cycles within our bodies: the bone calcium cycle replaces our bones about every 200 days, the respiratory cycle is twenty-two times a minute, Alpha brainwaves cycle at eight to thirteen times a second. Biologist F.A. Brown found cycles of activity attuned to phases of the moon in a number of creatures such as flatworms, fiddler crabs, and oysters. The Pacific worm Palolovindis swarms once a year at a particular new moon.

Economist Edward R. Dewey was fascinated by the cycles in everything from economic trends and international conflicts to changes in animal populations; from rotation of star clusters (1,000 years per cycle) to cosmic rays (10^{23} cycles per second). The 9.6 year cycle in Canadian lynx abundance is present in other animals and also in the propensity for humans to have heart attacks. Many other phenomena seem to cycle every four years, without as yet any explanation.

The correlation of many cycles is not understood. However, through cycles we come again to the understanding that we are part of nature, that human history is subject to the larger motions of Earth and cosmos, that our Two-legged pride and power has its limits. We are but one of many species, and may observe that human groups and civilizations seem to wax and wane by the same sort of long wave patterns that govern other animal populations. Some day we may be able to predict them. Even as we take this very broad and long view we may recognize the dimension added by the human being's unique consciousness of self and our ability to change by individual will and cultural agreement.

Temporocentrism

> *History is bunk.*
> ~Henry Ford, American industrialist, 1863-1947

The year is 1947. I am out on a double-date with my girlfriend and two young men, all of us teen-age students at the University of Chicago. I remember two things about the conversation. The first is that the two men maintain a very superior, male attitude about the atomic explosions at Hiroshima and Nagasaki two years previous. It will never happen again, they say, and from now on atomic energy will be used peacefully. Electricity will be almost free. The world will enter an era of prosperity. So, don't worry (your pretty little head) about the Bomb.

The second thing I remember is the unutterable smugness with which these two bright young men regard the knowledge and technology of 1947. They believe that humans, especially in America, are near the peak of knowing everything about everything. There's not much left to discover. We've arrived; we are *there*. Of course this was before the Cold War, hot wars in Vietnam, Iraq, and Afghanistan, culture wars, and Terrorism with a capital T, before the double helix, computer chip, genetic engineering, Internet, before global warming, nuclear proliferation, neoliberalism, before civil rights, feminism, and environmentalism. Despite the faith of those two young technocrats, humanity is still not *there* yet.

Apparently I remembered this incident so long because it is such a prime example of collective egotism, the superiority of Us, Here and Now. 'Us' may be defined narrowly or broadly—the smugness of those who have always had money and entrée, or maybe all of Western Civilization. One finds similar notions today. It is strange that so many people assume that their tribe is the one that lives at the very navel of the universe, favored by God and Destiny.

Instead, it is time to accept emotionally as well as intellectually that all humans present and past are one species, with a similar potential. Full scientific realization is fairly recent, with findings from archaeology, anthropology, philology, molecular biology, and many cross-cultural and inter-disciplinary studies. These show continuity across races, across cultures, and across the centuries. Yet this continuity is not only ignored but often denied, up to this very moment.

Once upon a time we (Western, civilized whites) found preliterate peoples and all those in non-white civilizations to be benighted savages, heathens, inferior and even sub-human beings, which notions conveniently coincided with our efforts to aggrandize their lands and to make slaves out of them. Today we are still ready to put our ancestors into a similar mold of inferiority in order to justify our own conceit about having reached the pinnacle of progress. We're oblivious to the fact that future people who think in this manner will probably not see us at the peak of achievement where we see ourselves. At this rate our own great-great-grandchildren in the 22nd century may regard us as deplorable or laughable barbarians.

Peter James and Nick Thorpe (*Ancient Inventions*) have a term for this mistaken view that only today counts: "temporocentrism." They note that ancient people had the same mental capacities that we do, lacking mainly the information accumulated through writing. One could add that the ancients probably had other sorts of information, based on direct observation of the natural world, which few people have today. There are losses as well as gains from living in the abstract, dependent on centuries of accumulated knowledge.

Old Cities: Despite the usual focus on Western Civilization as if it were the whole point of human history, the most enduring civilization—continuous from 3000 B.C. to modern times—is the Chinese. However the most ancient civilization we know of was discovered in 2001, a sunken settlement off the coast of western India, in the Bay of Cambay near Gujarat. A great city, five miles by two miles, it has been dated to 7500 B.C. One of the ancient Hindu holy books, the Mahabharata, describes the sinking of the city of Dwaravati, and some believe this underwater city is the ruin of that settlement.

The Bay of Cambay civilization appears to have been the forerunner of the Harrappan civilization in the Indus Valley, in what is now Pakistan and western India. An early culture in the Indus region can be dated back to 6500 B.C. These Mehrgarh inhabitants lived in mud brick houses, fashioned copper tools, and cultivated six-row barley, wheat, and jujubes, a date-like fruit. The full-fledged Harappan culture was flourishing three millennia later, at its height from about 2600 to 1900 B.C. It eventually included over 1,052 cities and settlements such as the ruined cities of Mohenjodaro, Harrappa, and Dolavira, which had the world's first urban sanitation systems, with indoor plumbing.

The Harappans' system of measurements was exceedingly precise. They had mastered a number of specialized crafts such as different forms of jewelry and they conducted a wide-ranging trade. Surprisingly, Harappan sites have not yielded any monuments to war or royalty, and the excavated buildings are of similar size, indicating a fairly egalitarian society. If the Harappans held some secrets to preserving peace and social harmony, we will have to wait until their script is deciphered—if that mystery is ever solved.

Before the Bay of Cambay discovery, the oldest known city was Catal Huyuk, an ancient settlement in Anatolia (Turkey). The earliest buildings excavated so far are reliably carbon dated 6500 BC, by which time Catal Huyuk was already a thriving town with about 6,000 inhabitants. Catal Huyuk displayed brilliant wall paintings including naturalistic scenes, geometric decorations, and a colorful town map. In its religious quarter archaeologists found stone and clay figurines and painted plaster wall reliefs that frequently represented a mother goddess. The town had no streets—access to houses was from the roofs. The people of Catal Huyuk buried items with their dead such as obsidian javelin heads, circular mirrors of polished obsidian, and bead necklaces, bracelets, and anklets. The variety of beads and stones suggest a far-flung trade.

Archaeology is a relatively new human endeavor of the last two centuries. Before then, 'everybody knew' the world was created in 4004 B.C. This date is actually about the time of the first Ur civilization in Mesopotamia. Literal readers of biblical genealogy seem to have mistaken the beginnings of civilization in the Near East for the beginnings of the human race; they further assumed that our home planet was created at the same time as its civilizations. Archaeologists determine dates through carbon-dating and even more accurate radioactive comparisons, while making complex deductions from bones and surrounding artifacts and natural residues. Forensic investigations into crimes often use similar methods.

To show how such archeological discoveries open up the view of our species, Catal Huyuk is at least 2,500 years older than the traditional date of the Creation or Garden of Eden generally accepted by Christians two centuries ago and by some Young Earth Creationists today. Also, Catal Huyuk was a full-fledged city only 3,500 years after the date we generally accept as the very start of agriculture. It seems likely that the domestication of plants and animals had proceeded earlier in some places.

Many civilizations rose across the continents during the past five millennia. The African civilization of Kerma in what is now the Sudan dates to 3000 B.C. It may have been Kush, mentioned in the Bible. Four thousand years ago, the settlements of a 'lost civilization' in Turkmenistan stretched across 1,000 miles of Eurasian plains. Archaeological evidence shows that the Mayan, Aztec, Incan, and other peoples in what is now Central and South America produced high civilizations to rival those of the Near East in Egypt and Mesopotamia.

We are still finding old cities. In 2008 a team of U.S. archaeologists discovered the ruins of a settlement in Egypt's Fayyum oasis. With houses of terracotta or dressed limestone, pottery and ovens, this Egyptian city dates back to the Neolithic period between 5,200 and 4,500 B.C.

The oldest known city in the Americas is Caral in Peru, dated back to 2627 B.C. It covered 163 acres and served as the center for a larger civilization, the Caral-Supe culture. Caral was first discovered in 1994. Probably there are more old cities yet to be found.

Ancient Arts and Spiritual Practices

...the astonishing and mysterious human past—the remote, alien era we call the Paleolithic, when your ancestors and mine walked the Earth, members of a vanished civilization about whose nature we can make only the vaguest guesses, but which may have been far more complex than we think.

~Robert Silverberg, American science fiction writer and editor, b. 1935

Three years ago in a German cavern, archeologists found a flute made from a vulture's wing bone, dated at least 35,000 years old. This find brings the number of carefully-crafted flutes from

this era to eight—four of mammoth ivory and four made from bird bones. Professor Nicholas Conard of Tubingen University said these well-made flutes suggest that the playing of music was already common. From the same era we have artistic figurines of mammoths, rhinoceros, and other animals of the time, and a Venus figurine. These and other artifacts come from what scientists call the Aurignacian culture in Europe and southwest Asia which lasted from about 45,000 to 35,000 years ago. The Aurignacian people are believed to be the first modern humans in Europe. Professor Conard says they "already had a whole range of symbolic artifacts, figurative art, depictions of mythological creatures [and] many kinds of personal ornaments."

Of all the amazing cave paintings found at Altamira, Lascaux, and elsewhere, the most breathtaking are those discovered at Chauvet Cave in France in 1994. There are almost three hundred figures of animals, depicting thirteen species. Some, such as cave bears, are now extinct. Besides being the oldest known cave paintings, dated to as early as 32,000 years ago, the Chauvet figures are as sophisticated as any art since. This suggests an even older tradition of art.

There is now evidence that humans were weaving cloth on looms 27,000 years ago: Professor Olga Soffer of the University of Illinois said that a 25,000-year-old figurine was wearing a woven hat. This raises the strong possibility that our ancestors by that time were also making nets with which to snare small animals or catch fish. Even longer ago, Neanderthal were sewing skins together for clothing.

So far, the oldest pieces of pottery we know of were found in a cave in China, and radiocarbon-dated to be about 18,000 years old.

Some evidences for religious belief are the intentional burial of the dead, especially with grave goods, and totemism or animal worship. Neanderthals before 40,000 BC were burying their dead, and they painted them before burial. About 60,000 BC in the Shanidar Caves in what is now Kurdistan, an individual was buried with a number of flowers (identified from their pollen). Because many of the flowers are known to have medicinal properties, some researchers suggest the buried person may have been a shaman.

Ancient Technologies

I once ambled around the Colorado Capitol in Denver with a compass and notebook in hand. I found that every aspect of the building's neoclassical architecture has alignments you see at many Neolithic ceremonial centers. The same kind of architecture can be seen in Washington, where countless astronomical alignments are constructed into the Capitol and its surrounding buildings and monuments.

~Craig Childs, "Stonehenges All Around Us," *Los Angeles Times*, Feb. 16, 2007

Modern civilizations rest on the base of ancient discoveries. Instead of turning our forebears into cartoon figures, let us respect their ingenuity and their lasting contributions. In other words, let us show a touch of humility. We needn't worship our ancestors, but we can honor them. The following discussion touches on only a few of the more surprising and lesser known areas of ancient knowledge. Note that there was a surge of intellectual activities and practical technology around 3000 B.C. when many people started living in larger groupings. The urban necessities of building and trade, ceremony and sanitation produced new problems and new solutions. The like-minded found each other and stimulated each other's thinking.

Humans have long been concerned with calendars and astronomical observations. Stone Age lunar calendars, inscribed on bone and dating back as far as 30,000 BC, have been found around

the world in Africa, Western Europe, Siberia, and Malaysia. These observations of the moon's phases may have been linked to the seasonal changes of hunted animals and fish, but James and Thorpe say that keeping track of time seems to be a fundamental human need. It may also be a fundamental human need to view the night skies, especially for those who basically live outdoors as our ancestors did. Babies still reach for the moon, children wish upon a star, and long after Stonehenge, people are still fascinated by eclipses.

Civilizations in many parts of the world independently made astronomical observations over centuries and developed calendars. Five thousand years ago the megalith builders of Western Europe built their monumental observatories, while the Sumerians and probably the Chinese had lunar calendars by then. About 800 or 900 BC, the Zapotec civilization of Mexico devised a sacred calendar of 52 cycles, leading to the incredibly accurate Mayan calendar 1,000 years later.

There is also the mysterious Antikythera Mechanism, sometimes known as the first mechanical computer, designed to calculate astronomical positions. In 1900, Greek sponge divers brought up the bronze object from a Roman shipwreck off the coast of a Greek island. The ship had sunk early in the first century A.D. Bruce Sterling describes operation of the mechanism as follows:

> A crank or knob drives at least 32 triangular toothed bronze wheels, causing three dials and numerous pointers to show the past and future positions of the moon, sun, and possibly the five visible planets. [It] displays the time of eclipses and of the Greek Olympic Games….A digital scanning of its rusted interior in 2006 makes its real-world function clear (especially since it has hand-etched instructions).

John Seabrook, in a *New Yorker* article about the Antikythera Mechanism, says that until fairly recently the object's significance was overlooked because such scientifically precise gearing was believed to be impossible at the time of the shipwreck. In fact, clockwork did not appear in Europe until the 14th century. A brilliant scholar, Derek de Solla Price, devoted himself to proving that the Mechanism was an ancient computer, so sophisticated that it could not have been the only one of its kind. Price said "It must surely rank as one of the greatest mechanical inventions of all time." Yet Price's work, published in the 1970s and widely reviewed, did not change the history of technology. Seabrook says "One is struck by the reluctance of modern investigators to credit the ancients with technological skill. [It is] almost as if we wished to reserve advanced technological accomplishment exclusively for ourselves."

The ancient Greeks had a tradition of great inventors such as Archimedes, Philon, and Heron of Alexandria. In the first century A.D., Heron invented a steam-powered device, a mechanical slot machine, a water-powered organ, and many automatons. Possible candidates for the inventor of the Antikythera Mechanism were the great Greek astronomer Hipparchus or his successor Posidonius. Michael Wright, a clockmaker and curator of mechanical engineering at the London Science Museum, became quite convinced that when the West declined, the Greeks' technical expertise passed to the Islamic world and was reintroduced to the West by Arabs in 13th century Spain. For instance, in ninth century Baghdad, the Banu Musa brothers published the "Book of Ingenious Devices" detailing many geared mechanical inventions. Let us finally admit that we moderns had many clever predecessors.

Mathematics developed across the continents as though its season had arrived. Robert Kaplan, a Harvard professor, says the concept of zero first appeared in ancient Sumeria as long ago as 3000 B.C. in the form of a wedge inserted between cuneiform symbols to indicate the absence of a number in a place. During India's Vedic period and afterward, from 1500 BC to

1200 CE, a school of Indian mathematicians introduced the symbol for zero, and worked also on the decimal number system, negative numbers, and algebra. The Mayans developed zero independently around 4 AD. Meanwhile, in Greece during the sixth century BC the Pythagoreans developed Euclidean geometry and trigonometry. In 245 BC it is said that Eratosthenes of Cyrene calculated the circumference of the Earth, about 50 miles off today's best estimate.

Early Australians reached New Guinea and Australia 40,000 years ago, across stretches of open sea 50 to 60 miles across. Diamond says they had the world's earliest watercraft, by far. Little is known of how they navigated. They created cave paintings at the same time as Cro-Magnons in Europe. Australians had the world's earliest flint mines 20,000 years ago and invented the boomerang 10,000 years ago.

Medical skills are older than most assume. Recently a group of archaeologists found evidence that prehistoric dentists may have used stone drills to treat tooth decay as far back as 9,000 years ago. At a site in Pakistan archaeologists unearthed skulls that had teeth dotted with tiny, perfectly round holes. Under an electron microscope the holes showed a pattern of concentric grooves most likely formed by the circular motion of a drill with a stone bit.

Almost all of the foods we eat today were developed by ancient farmers. Many food plants were domesticated by the peoples of North and South America starting about 8000 BC. These include corn, squash, beans, tomato, potato, sweet potato, peanuts, pumpkin, chili pepper, avocado, vanilla, papaya, pineapple, and cacao (chocolate). According to the *Encyclopedia of American Indian Contributions to the World*, three-quarters of the varieties of foods now grown globally were first turned into crops by indigenous farmers in the Western hemisphere.

The Romans were not the only people to engineer water systems. The ancient cities of Persepolis (Iran), Athens, and Mohenjo Daro (Pakistan) had excellent water-distribution and sewage removal systems. The city of Petra in what is now southern Jordan was very prosperous at its height around the time of Christ. In an area that averages only six inches of rainfall per year, the Nabataeans who built Petra supported a city of 20,000 people with an elaborate system of cisterns, pools, and waterways that captured rainfall and harnessed desert springs, bringing an estimated 12 million gallons of fresh water to the city daily. Ceramic pipes were connected by bell and spigot joints, a technique still in use today.

Mixed Civilizations: We 21st century folks really need to stop acting as if civilizations have a barbed-wire border around them. European history began in the Near East. Western civilization depended on the earlier inventions and achievements of Egypt and Mesopotamia, the Phoenician alphabet and Hebrew monotheism, and all the new ideas that the seafaring Greeks picked up from their travels. In fact, successive waves of migrations which settled Europe from the earliest times—from Cro-Magnons to the barbarians who continually threatened Rome—came from the steppes of Eurasia. Europe was not the cradle but the testing-ground and school.

Ancient and medieval Europe had continuous contact with the great civilizations of Asia. Diamond notes: "From A.D. 1000-1450 the flow of science and technology was predominantly into Europe from the Islamic societies stretching from India to North Africa [and] during those same centuries China led the world in technology." Consider printing, which began our current 'information explosion.' Gutenberg's invention of movable type in the 1440s required paper. The art of paper-making had been invented in China about 105 A.D. and spread to Japan, the Middle East, and eventually to Europe in the twelfth century. Woodblock printing was used in China, Korea, and Japan seven centuries before Gutenberg invented the printing press in the West.

Scholars Ladislaus Semali and Joe Kincheloe note that several scientific ideas and technological inventions that are traditionally associated with the West were actually from

China, including magnetic science, quantitative cartography, cast iron, mechanical clocks, and harnesses for horses.

Nor were the Americas totally isolated from the rest of the world after the last wave of American Indian ancestors arrived across the Bering Sea around 9,000 B.C. It is generally accepted that Viking explorers settled briefly on the North American continent, perhaps in Labrador and Newfoundland, around 1000 A.D. There is evidence that Polynesians had contact with South America between 500 and 700 A.D., introducing chickens there before the Europeans did, and growing sweet potatoes in Polynesia that are native to the Americas. Odd hints, unconfirmed, suggest contacts by New Guineans, Arab explorers, Welsh explorers, Romans, Jewish refugees fleeing the Roman Empire, West African fleets, Chinese fleets and others.

We need not compete about whose civilization is older or bigger than whose. Instead, let all these past civilizations and their achievements induce both wonder and humility. As the Durants say, "Knowledge of history may teach us that civilization is a cooperative product; that nearly all peoples have contributed to it."

The more flamboyant and profitable advances of today's scientific technology overshadow discoveries such as Catal Huyuk or the Cambay Bay civilization, while humanity's divisions continue as destructive as ever. Still we do have knowledge as never before to see the whole human past. Those who search for bones and broken pottery, stone tool kits and nets of seeds, y-chromosomes or mitochondrial DNA engage in something of a spiritual search, looking for our ancestors. Never 100% certain of who laid these ribs and shards or when, they may argue and revise, but those old bones do resonate with something. The fragments of ancient beings both in and out of our immediate lineage—let us even include forerunners whom we cannot claim as quite human—all have greatly enlarged our consciousness and could place us in a new empathic relationship with the rest of our kind. Universal history is the story of the human race as one.

Telling Ourstory

> *What a long strange trip it's been.*
> ~The Grateful Dead, album title

French postmodernist philosopher Michel Foucault described history as having undercurrents of suppressed and unconscious knowledge, with structures of exclusion that help societies build their identities. Only a few decades ago, women called attention to a startling omission in Western history: half the story was untold. Written history simply ignored women except for a few queens, saints, kings' mistresses, and presidents' wives. As historian Morton Hunt says: "In the war of the sexes, as in other wars, history is written by the victors." So feminists promoted 'herstory' as an antidote to 'his-story,' and the gender balance has begun to even out.

Historians also began to include others who were left out, such as the common people, the colonized, the enslaved, children, and the losers of wars. Other context was missing: creatures and ecosystems were left out of the narrative. Historians now consider such things as the effects of rats and lice in spreading disease. We learn how societies developed differently because of the unequal distribution across continents of plant species suitable to become staple foods, of animals suitable for domestication, or of ores that could be used to make metals.

Moderns and Americans in particular need much more historical perspective. We could then see ourselves as part of an evolving species and we could actually learn from the past. History needs to be taught in new ways—not mainly as dates, leaders, and famous battles, facts to be

remembered long enough for the standardized tests. It needs to be dramatized. Note to film-makers: please make more films, thoughtful films, about little-known but dramatic events and fascinating personalities of world history. Great swaths of history have been entirely ignored in film, used as backdrops for anachronistic adventures, or depicted cartoon-style. Not only would more realistic and substantive films be entertaining, but the more that people know about their collective past, the less likely they are to repeat *those* particular mistakes.

A different way of looking at a civilization counts the number of its generations (at 25 years each). This method brings civilization back into the frame of family, in which it does not appear to be as old. By this count, Egypt and Mesopotamia began written history only about 200 generations ago. Even Catal Huyuk began only 360 generations back. You are probably aware of three living generations in your own family, quite likely four or even five. Viewed like this, civilization as a whole appears to have had a shorter learning span than we assumed, indicating that we may not be completely civilized yet. And, is being civilized the same thing as being self-domesticated? Or the same thing as becoming more evolved? What are we growing toward?

To recapitulate: We have had to adjust our timetables about how long humans have been civilized, how long humans have been humans, and how long anybody remotely human has been here. History itself is an organic pattern, with civilization a cooperative product of many peoples. Ancient peoples, historical and pre-historical, showed remarkable ingenuity in their technologies, and sometimes had knowledge that we have only recently rediscovered. Civilization may be older than commonly believed, at least 9,000 years old. Yet if you look at history in terms of generations, we have not been civilized for so very long, which may help excuse our deficiencies, but also inspire us to start growing up fast—as we urgently need to do.

Dissatisfactions with the way the story has been told or taught should not turn us against all stories, whether history, herstory, or ourstory. The story of everything until now is acquiring a richer texture, a broader vista. As it grows to include the living biosphere, ourstory will turn again into a mythology, a sacred earthstory, with humans still present and still making decisions, but on a smaller scale, in perspective, in co-evolution.

Chapter 10
A Species among Species

How many hearts with warm red blood in them are beating under cover of the woods, and how many teeth and eyes are shining! A multitude of animal people, intimately related to us, but of whose lives we know almost nothing, are as busy about their own affairs as we are about ours.
~John Muir, American conservationist, 1838-1914

We look for other creatures and constantly discover ones new to us (such as 200 frogs in Madagascar). Meanwhile other species are disappearing by the day, mainly from our destruction of their habitats. We humans have pretty much taken over the planet. Mark Lynn, author of *High Tide*, notes that the total body mass of human beings now exceeds by a hundred times the biomass of any large animal species that has ever existed, including dinosaurs and elephants. Also humans have cultivated or deforested 40% of Earth's plant biomass.

So, what kind of critter are we, anyway—a naked ape or next thing to the angels? It is a perennial question. In this day and age most of us accept that humans are related to the animal kingdom. At the same time our tool-making proclivities, hand manipulations, and powers of speech have taken us in a direction beyond the others, for both good and ill. We are *Homo sapiens sapiens*, the doubly wise beings, who know that we know. At least that is our potential.

As animals we are neither domesticated nor wild but are self-domesticated. The late scientist Carl Sagan called us "half-feral." The original "*Star Trek*" series played on this tension between domesticated and wild by contrasting Kirk the man of impulse and action with Spock, who was from a buttoned-down race farther along the road of self-domestication. Some think humans need to be more like Spock. Others feel that self-domestication has already gone too far—as individualists or libertarians they rage against the 'Nanny State,' bourgeois conventions, the dead hand of the past, established institutions, bureaucracy, and/or government in general.

Traditionally, women have been assigned to domesticate the race but are no longer so willing to take on the task, as some want to be wilder themselves. Wildness has many benefits such as creativity, flexibility, diversity, and love of freedom, as well as more negative traits.

We acknowledge our animal nature if pressed, but most tend to downplay it. However, Temple Grandin, a well known animal scientist with the added perspective of being autistic, notes that "All animals and people have the same core emotion systems in the brain." She cites neuroscientist Dr. Jaak Panksepp who calls these systems "blue ribbon emotions" because localized electrical stimulation of the brain generates well-organized behavior sequences in mammals—including humans—and some birds. His four core emotion systems are 1) *Seeking*, a pleasurable combination of desire, anticipation, and curiosity; 2) *Rage* (which allows the animal to fight against a predator that has it in its grasp) and its milder form, frustration; 3) *Fear,* when survival is threatened; and 4) *Panic,* which results from the deep need for social attachments, affection, protection, and recognition, rising from the total dependence of mammalian young.

Three other special socioemotional systems kick in at appropriate times. These are *Play*, *Lust*, and maternal *Care*. It is noteworthy that when people disparage emotions, they often select certain emotional systems (such as *Care*) but ignore *Seeking,* although this may be *the* master emotion. Panksepp says *Seeking* could be a "generalized platform for the expression of many of the basic emotional processes." *Seeking* can describe not only an animal's nosing about for food but also a scientist's thirst for knowledge.

For a decade, scientists have been conducting in-depth research about socially complex, intelligent animals such as dolphins, elephants, and apes. British scholar Margi Prideaux says that until quite recently, few academics were willing to speak openly about the subject, but today long-held scientific assumptions about total human superiority are changing. Scientists who study cetaceans find that much of their behavior is learned and passed down from one generation to the next. Dr. Lori Marino (Emory University) maintains that dolphins have distinct personalities, a sense of self, innate ability to learn language, and *they can think about the future*. Building on the scientific knowledge, philosophy professor Thomas I. White, Loyola Marymount University, maintains that "dolphins have intellectual and emotional abilities sophisticated enough to grant them 'moral standing'; they should be regarded at least as 'nonhuman persons'".

E.O. Wilson invented the term *biophilia* for "the innately emotional affiliation of human beings to other living organisms. [Biophilia is] hereditary and hence part of ultimate human nature." Research at Brigham Young University found that babies and toddlers as young as six months old could figure out that an aggressive bark matched an angry-looking dog (baring its teeth) even if they had had little experience with dogs. Lead researcher Ross Flom, who teaches neuroscience, said that over the centuries dogs and humans have learned how to communicate.

A science fiction story depicts a contemporary world in which all the dogs have died from a plague and humans deeply grieve the loss of their 15,000-year companions. We would grieve for many others too. Half of all primates—our closest relatives—are in danger of extinction, and amphibians such as frogs are disappearing. What if songbirds were only a memory, pictures and songs preserved on tape? Many other animals (and plants) are endangered by the current mass extinction called the Sixth Extinction. By some estimates the planet may lose 30% of its animal species within the next century. Most at risk are top carnivores, rainforest species, marine reefs, and species with a small geographic range.

A PBS program says that 200,000 generations of humans might live and die before the fortunate ones see the same level of biodiversity that we enjoy today. That would be about five million years—the same length of time that separates us from our first pre-human ancestors.

We co-evolved with other animals, which have always been present in our world and are a part of our mental inheritance. Our daily language would be bare without all the embedded words and idioms borrowed from the animals. Anthropologist Paul Shephard pointed out that children of primary school age, whatever the culture, grow their minds by categorizing their world. The universal subjects for this cognitive achievement have been animals, plants, and other natural objects, along with body parts. But with urbanization and mass media, children categorize cartoon figures and other man-made icons and objects instead of the natural world. At this basic level we are growing away from an ancient link with the other creatures, and some have lost all sense of connection with nature.

At the most extreme expression of this separation, a recent letter to the editor (it denied the idea of human-caused global warming) ended with the words, "As for the polar bears, if we can't eat 'em I say we don't need 'em." James Lovelock claims in *Gaia's Revenge,* "We are programmed by our inheritance to see other living things as mainly something to eat." Yet we also seem to be programmed for biophilia. Most humans show affection toward certain animals, and many also have deep bonds with plant life, responding to the beauty of flowers, plant shapes, their shadows and motions in winds. There is in fact a field of horticulture therapy.

Trees have long been part of human mythologies. We use the image of a tree to show inheritance, development, and evolution. Most humans are at least dimly aware that living trees serve humanity in many ways: giving shade, protecting from wind, holding the water table and,

on a larger scale, tempering regional climate. A local columnist, Fran Alexander, suggests that we should treat trees as "a crucial utility that regulates heat, cold, soil absorption, flooding, air quality, pollutant filtration, and as a bonus, makes our surroundings beautiful."

Kenyan Wangari Maatai (1940-2011) led a movement to plant trees while Julia Butterfly Hill devoted a year of her life to protect one giant, ancient tree from destruction by living in it. In the Chipko Movement in India, villagers literally hug trees to save them from corporate tree-cutters. Forests are a critical resource for the subsistence of rural people especially in hilly and mountainous regions. They provide food, fuel, and fodder, and they stabilize local ecosystems. The village women who began Chipko actions in 1973 coined the slogan: "What do the forests bear? soil, water, and pure air." Their protests stopped the practice of green felling in several regions of India.

Diana Beresford Kroeger, Canadian botanist and tree defender says everyone can be part of this action: "Think about your local trees. They're your trees; protect them. When someone comes to cut them down, object." Many of my neighbors and I already do this. Construction workers may regard us as cranks—so be it.

Not only is human physical survivability threatened by diminished ecosystems, but our cognitive and spiritual survivability is threatened by the loss of our planetary companions.

Deep Ecology

With all beings and all things we shall be as relatives.
~Sioux Indian saying

The dualistic notions of self and world, mind and body formulated by Rene Descartes in the 17th century became an essential part of modern science and the modern worldview. But many now recognize that this psychic separation is at the root of our destruction of the planet. It also leaves out a vital part of our selves and limits our capacities. Australian Clive Hamilton, professor of Public Ethics, says there are two forms of knowledge, intuitive and rational, but the scientific-industrial revolution banished intuitive knowledge entirely in favor of one particular form of rationality—instrumentalism—that finds an idea's truth to be in its usefulness. But what is useful to one may not be so to another and what is useful today may not be so tomorrow.

Intuitive knowledge is gained from what we previously called participating consciousness, an older and more native way of being-thinking, defined by historian Morris Berman as "merger, or identification, with one's surroundings." Because it is not the modern world view, many still misunderstand participating consciousness, For instance, neurophysiologist William H. Calvin defines it as "identification of self with the environment" which "tends to result in being eaten by a predator, or falling off a cliff." He seems to have in mind something like a bad acid trip, in which an individual jumps out the window under the delusion that he can fly. But it is instead more like the consciousness of a tiger—and tigers rarely make such mistakes.

The great 19th century naturalist and conservationist John Muir, sometimes called the 'Father of the National Parks System,' found spiritual sustenance in wild places and participating consciousness. Muir's joyous remark when he first explored Yosemite was "We are now in the mountains and they are in us." For some gifted people, and at special times for the rest of us, participating consciousness shades into the deeper experience of nature mysticism, an overpowering sense of the oneness of life in all things.

A century after Muir, Norwegian philosopher Arne Naess gave philosophical foundation to the idea that humans need radical changes in their relationship to nature. It is called 'deep'

ecology because it asks deeper questions about human life than does an environmentalism that is chiefly concerned with pollution and depletion of resources in the developed world. Tulane philosophy professor Michael Zimmerman says deep ecology is based on two basic principles. First is the interrelatedness of life on Earth that was rediscovered by modern ecological science. Deep ecologists do not regard humans as something completely unique or chosen by God but instead see us as integral threads in the fabric of life.

The second principle is the need for what Arne Naess calls human realization. Zimmerman says this means that as we become eco-centered, and as we expand the self to identify with others, whether people, animals, or whole ecosystems, we become larger, we 'realize' ourselves.

> Instead of identifying with our egos or our immediate families, we would learn to identify with trees and animals and plants, indeed the whole ecosphere. This would involve a pretty radical change of consciousness, but it would make our behavior more consistent with what science tells us is necessary for the well-being of life on Earth.

A 1985 book by Bill Devall and George Sessions describe scientific, philosophic, and traditional sources for this "radical change of consciousness," sources that besides modern science go back to Buddhism, Native American beliefs, Baruch Spinoza, Ralph Waldo Emerson, and many others. These ideas have had growing influence in the areas of psychology, religion, and politics, where many in the Green movement consider themselves deep ecologists.

Critics of deep ecology include conservative Christians who defend the anthropocentric view. Also, a few of those who espouse deep ecology have made questionable statements that suggest they hate the human race. But deep ecology theorist Warwick Fox says we must distinguish between misanthropes who hate humanity, and those who are anti-anthropocentric, who simply say humans aren't the most important species on the Earth to the exclusion of all others.

Wildlands

"In wildness is the preservation of the world."
~ Henry David Thoreau, "Walking," *Atlantic Monthly*, June 1862

Once upon a time the whole planet was wilderness, defined as a natural environment that humans do not control and have not developed with roads, pipelines, mines, dams, or other industrial infrastructure. The planet remained wild even after human beings came upon the scene—not so much after they began to congregate in towns and cities, chop down forests, and mine for ores. The wildest regions have largely remained so because they are inhospitable to humans. This doesn't necessarily protect them from commercial exploration and exploitation.

It is hard to estimate just how much of the planet is still left intact, undisturbed, and wild. Estimates range from almost half to less than a fourth, with humans constantly encroaching.

The huge taiga, for example, is the coniferous forest that circles the globe from Alaska and Canada (where it is sometimes called the North Woods) to Scandinavia, the former USSR, and Mongolia—altogether 11 million square miles, about 17% of all Earth's land. Logging is currently a serious threat to the taiga. Another danger rises because vast amounts of oil and gas are believed to lie under these boreal forests. And the taiga is greatly threatened by climate change, the effects of which are greater in the Far North. A Russian scientist, Vladimir Petko says "Warmer springs favor moth invasions. They can eat the needles of entire forest regions in one summer. The trees die and then usually succumb to forest fires that in turn destroy soil

vegetation and accelerate the melting of permafrost." Melting permafrost releases methane, a powerful greenhouse gas, which creates a feedback that melts more permafrost.

Other large wildlands are the Tibetan Plateau ("The Roof of the World") whose glaciers supply water to two billion people: the Australian outback; and the Sahara and Gobi deserts. Stark landscapes may look lifeless to the tourist, yet support many plants, animals, and people—for instance the Sahara Desert is home to about 70 species of mammals, 90 species of birds, and 100 species of reptiles. Nomadic herders live there at a very low population density of one person per square mile. Reasons to keep wildlands intact and to preserve landforms range from human species survival issues to scientific, economic, humanitarian, and spiritual concerns.

The Ocean and other large bodies of water also need our help, and need it urgently. Less than 1% of marine ecosystems now receive effective protection.

Scores of conservation organizations such as Conservation International, with its biodiversity hotspots project, Nature Conservancy, and World Wildlife Fund attempt to protect the land, waters, wildlife, and peoples of the world's wildlands. The Sierra Club and many others concentrate on conservation within one country, or conserving one species or wildland. They have learned to include the needs and knowledge of local people in their projects. For instance, the organization Blue Ventures helps protect the diversity of threatened marine ecosystems in the Western Indian Ocean, in places where local people depend on the Ocean for their livelihood. An essential part of this conservation project is programs to reduce poverty, provide education and public health services, family planning, and environmental education. Leadership comes from within the local communities and draws on indigenous knowledge.

In the U.S., the 1964 Wilderness Act legally defined wilderness: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and community of life are untrammeled by man, where man himself is a visitor who does not remain." It also created a system for preserving wilderness and protected some nine million acres of federal land (now 107 million acres). Under the Antiquities Act the President has legal power to designate public land as a national monument. Since 1906, sixteen presidents have used this power to create 128 monuments, including the Grand Canyon—one of the first. George W. Bush created the most total acreage—89 million acres—as marine areas.

Protecting wildlands and wildlife is also accomplished on the small scale by local people. Many plant their yards for birds, butterflies, and other wildlife, while some join together to acquire, protect and restore local forests and wetlands. Douglas Tallamy, in *Bringing Nature Home*, argues that backyard gardeners are a vital part of preserving global biodiversity. He is trying to pull together a "Homegrown National Park" composed of thousands of miles of backyards. Wildlife needs these connected habitats or corridors to move between. Looking toward climate change, Vermont's statewide campaign called Our Forests, Our Future creates migratory corridors from land acquired by local towns and native tribes. These larger habitats allow cold-weather animals to move north as their bioregion becomes warmer. +++

Environmental writer Julia Whitty notes it was only 164 years ago—about six generations—that Vermont congressman and writer George Perkins Marsh, upset by the disappearance of Eastern forests, helped start the modern conservation movement by setting aside Adirondack Park, the largest publicly protected area in the contiguous U.S. Since then the conservation idea has spread worldwide. There are now 160,365 protected landscapes which preserve 14% of the planet's land area, and 6,967 marine areas. Human awareness is growing, and this is a cause for optimism. +++

Part Three: The Color Green

What we now think of as 'green' is a bare beginning.
~Daniel Goleman, *Ecological Intelligence,* 2009

Note that the word 'green' does not mean quite the same thing as 'sustainable.' Another concept is also on the horizon: thrivability. *Green* (adjective) is defined as: beneficial to the environment and tending to preserve environmental quality (as by being recyclable, biodegradable, or nonpolluting). Green can also apply to activist individuals or organizations: "advocacy for or work toward protecting the natural environment from destruction or pollution." A Green (noun) is usually a member of a Green Party.

Something is *sustainable* only if it has the capacity to endure over time—if it can be continued with minimal long-term effect on the environment. Examples are sustainable development, sustainable agriculture, and sustainable fishing. It is possible for something to be green in the sense that it is much more beneficial to the environment than conventional choices—yet not be sustainable in the long-range. This is often true of consumer products that advertise themselves as 'green.' Recycling—in the sense of breaking down items to recover the resources they contain—is green, but reusing items or buying those manufactured and packaged so they don't contain any scarce resources, is even greener and more sustainable.

Thrivability is an aim or focus that includes sustainability but goes beyond it and beyond mere material survival. It affects all aspects of life, including social justice and spirituality. An organization known as the Thrivability Institute defines it as follows:

> Thrivability invites us to proactively consider the question of "what kind of a world do we want to live in?" primary to the one often asked in sustainable circles, namely "how do we fix the mess we've made?" Thrivability approaches the Earth and all its inhabitants as partners with whom to co-create respectfully, honoring all perspectives. It requires a perceptual shift in how we relate to and design everything.

Chapter 11
Visions and Strategies

Tomorrow is fresh, with no mistakes in it.
~Lucy Maud Montgomery, author of *Anne of Green Gables*

What do we want our world to be like? What are the obstacles and problems to overcome? How will we achieve a sustainable, peaceful and just world?

Our first consideration is how we define problems and what we consider as most important. In 1977, the *Futurist* magazine printed a list of "Forty-one Future Problems" described as "national or international problems that could become major societal crises in the coming decades but that are not very widely recognized at the present time." Some of these problems were not brand-new even in 1977. They included genetic engineering issues, cumulative effects of pollution, loss of cultural diversity, chronic unemployment, the end of oil, persistent malnutrition, global firewood shortage, limits to the management of large, complex systems, and 32 others. The decades have come and gone, most of the listed problems have grown more challenging, yet even today few of them are widely recognized as important or urgent problems for the public to deal with.

Surprisingly, the list did not refer to nuclear weapons or disarmament (although it was the middle of the Cold War) nor did it mention soil erosion, shrinking water supplies, the Sixth Extinction, or climate change, which was just over the horizon. The *Futurist* list emphasized social problems that afflict the United States and other technologically advanced nations more than on strictly human species problems, reflecting a cultural bias that often continues today among futurists.

The Foresight Saga

A unique responsibility devolves on man because of his [or her] capacity to view a whole not confined to any little spot of tribal territory or any passing moment in time.
~Lewis Mumford, *Wilderness Magazine*, winter 1959-60

Actions have consequences (and inaction has consequences). Understanding that action A usually leads to B is a prerequisite for a competent parent, householder, and working person as well as a good neighbor. Such foresight, in addition to good-will, ensures the continuity of families and communities. The person who lacks this awareness of consequences is considered immature, a risk-taker dangerous to himself and others, or even sociopathic.

The amount of energy and resources we devote to preventing or resolving problems depends on how (or whether) we perceive those problems in the first place. Ants and squirrels have a species habit to store food for the winter. Instead of hard-wired instincts, our faculty of foresight is a developing potential which can be reinforced or undermined by a particular culture. Those societies that focus on bread and circuses, or, as ours does, on quarterly earnings, consumption, and throwaway consumer goods, do not value foresight to the degree some others do.

Cultures have tried to fortify individual foresight in a number of ways including these: taboos that condense generational learning into prohibitions; shamanistic visions and religious prophecy; dramatic play that simulates possible scenarios; principles such as 7th generation

thinking; scientific prediction; other kinds of rational prediction; and imaginative literature (science fiction) that explores human adaptations to potential futures. +++

All of these methods are in use today and we could make greater use of some. For instance, in a survey of *Ecologist* readers they agreed that humanity needs new taboos in order to reinforce behavior such as reusing things or limiting family size. Many have already internalized such eco-taboos. One potential problem is that prohibitions in tribal societies or traditional religions often outlast the original conditions or knowledge that gave rise to them. However people today are very conscious of the reasons behind their taboos and hopefully would remain so. By taboos or by other means, we urgently need to develop cultural foresight to a much greater degree.

Things Fall Apart: We earlier listed major challenges such as climate change and other ecosystem failures, nuclear stockpiles, large standing armies, dangerous technologies, and population growth which, though slowing, can still overshoot the planet's ability to support so many people with such big footprints. Anthropologist Jared Diamond in *Collapse* analyzed a number of historical and modern societies that suffered drastic declines He looked for the reasons some of them managed to turn themselves around before they became lost in the mists of time. Diamond defined a collapse as "a drastic decrease in human population size and/or political/economic/social complexity, over a considerable area, for an extended time."

After studying all these historical instances of collapse, Diamond was able to list five factors that in some combination together contributed to the breakdown of a society. One was environmental damage by the group or nation's own population, such as deforestation or depleting aquifers. Another was damage by the natural forces of climate changes. A third reason was the behavior of hostile neighbors, war and harassment. Fourth, a weakening of trading partners and allies could also send the society into decline. The fifth factor was the wild card: the varying responses of different societies to similar problems.

How will *we* play the wild card? This fifth factor is our theme in these books, which explore ways that we can transform our thinking patterns so that we avoid catastrophe and create a livable, sustainable world for present and future members of our species.

Dr. M. King Hubbert, geophysicist, noted that "During the last two centuries, we have known nothing but exponential growth, and we have evolved what amounts to an exponential-growth culture, a culture so heavily dependent upon the continuance of exponential growth for its stability that it is incapable of reckoning with problems of non-growth." Are we truly incapable of dealing with this major change? Or in William R. Catton's analogy, are we like the yeast colonies which mindlessly consume all the food in their pail just as fast as they can and then die out?

Jane McGonigal speaks of "a particularly American failure to believe that the worst can really happen, because we're systematically trained by our culture to focus on the positive. It's a failure that makes us more susceptible to catastrophic events."

Writers George Monbiot and Thomas Friedman assert that responses to date in the United States, UK, and most other countries are entirely inadequate to the scope of the problems we face concerning climate change. Monbiot says "Two obvious conclusions are that governments must decide which existing reserves of fossil fuel are to be left in the ground, and they must introduce a global moratorium on prospecting for new reserves. *Neither of these proposals has ever been mooted for discussion."* So let us start discussing them. +++

Monbiot and Friedman scorn popular articles and books that tell us it is easy to be green, because while this literature may promote some positive individual changes, it gravely

underestimates the dangers ahead. Friedman quotes energy expert Nate Lewis from the California Institute of Technology about the enormous challenge we face because of climate change, and how far short we are of the goal. Lewis says that after Kyoto, when countries supposedly became serious about the problem, ironically it actually became worse. In 2010, worldwide emissions of CO_2 rose by 5.9%, the biggest jump in the last 200 years. Lewis says "It will take all of our investment capital and intellectual capital to meet this challenge. Some people say it will ruin our economy and is a project which we can't afford to do. I'd say it is a project at which we simply can't afford to fail."

The same is true for our other existential challenges. We need a balance between false cheer and worry—a positive realism; a well-informed, optimistic commitment to solving our problems.

We also need a positive future to look forward to. Let's look at a few specific visions that are floating around.

The American Dream is not always defined the same way. Nor is it clear whether this dream is just for those who live within the boundaries of the United States, or whether it is actually a suitable vision for everybody in the world. The aims of bettering oneself economically and living in greater freedom, without the restrictions of class or religion, motivated American immigrants from colonial times onward. The phrase itself was coined by historian James Truslow Adams in 1931:

> The American Dream is that dream of a land in which life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement. It is a difficult dream for the European upper classes to interpret adequately, and too many of us ourselves have grown weary and mistrustful of it. It is not a dream of motor cars and high wages merely, but a dream of social order in which each man and woman shall be able to attain to the fullest stature of which they are innately capable, and be recognized for what they are, regardless of the fortuitous circumstances of birth or position.

As Adams suggests, some think of the American Dream mainly in terms of economic opportunity and material satisfactions. This definition predominated, at least in the media, during the last thirty years of neoliberal doctrine and globalization. Meanwhile, inequality grew between the wealthiest few and the majority, which made it increasingly difficult for most Americans to achieve the American Dream in terms of economic security and a middle-class lifestyle. Families required two wage-earners while the working poor often needed to hold down two jobs to subsist. Also people became increasingly aware of limitations on opportunity, of glass ceilings and persistent discrimination against women and minorities.

The American Dream, as usually defined, has an even deeper problem: it has led to a consumer society which is unsustainable. The Earth is running out of the resources needed to keep the party going. Meanwhile the Dream has been exported around the world to new middle classes in developing countries who want their own refrigerators and automobiles. They have been watching American television and films, and they would like the same material prosperity and lifestyle they see there. But Americans got rich under several circumstances that are not likely to be repeated: they rapidly exploited the resources of a big, new continent, using slave labor and cheap immigrant labor such as the Irish and Chinese.

Unfortunately, while it seems only fair that everybody should live as well (materially) as Americans, accomplishing this end would likely destroy the Earth. Americans themselves need to scale back drastically. In general the American Dream is not a complete vision for either

Americans or the rest of the world. It is too focused on material consumption and too little on sustainability, spiritual development, or future generations. Some redefine the American Dream in terms of a simple but fulfilling life along with freedom for each individual to self-actualize in the "pursuit of happiness." This vision is more exportable than the consumerist version.

__The European Dream__ is the title of a 2004 book by Jeremy Rifkin which proposes a countervision to the American Dream. Rifkin suggests that the European values of sustainable development, quality of life, multicultural diversity, and the nurturing of community are better suited to the human future than an American Dream that has come to emphasize unrestrained economic growth and the pursuit of individual self-interest. Rifkin talks about the European commitment to "deep play"—defined as the intrinsic value of cultural institutions and community apart from dollar values and immediate usefulness.

In a discussion of differing concepts of space and time, Rifkin says Europeans value leisure more than Americans do, while Americans more highly value efficiency and the work ethic. Europeans apply the precautionary principle when adopting new technology. Europe devotes more to humanitarian aid, and in contrast to the U.S. has abolished the death penalty.

The EU, comprising 25 nations, has 455 million inhabitants and is now the largest economy in the world. Compared to Americans, Europeans have a longer life span, higher literacy rates, less poverty and crime, longer vacations, and shorter commutes to work. Wealth is more broadly distributed, and European cities have less blight and sprawl.

However a few years later Europe is in the throes of a debt crisis that spread from the U.S. economic meltdown in 2008. The proposed cure—imposition of drastic austerity measures based on a German version of neoliberal ideology called ordoliberalism—appears worse than the disease, and particularly hard on nations on the periphery of the European market such as Greece, Spain, Portugal, and Ireland. This policy has plunged several nations into deep recession, toppled a dozen governments, and led to protests and riots by the poor who are the targets of austerity cuts. In Europe as in the United States, powerful economic interests appear to be trying to roll back social gains made over the previous century.

In May 2012, France elected a Socialist President who is anti-austerity and pro-stimulus, while in suffering Greece voters punished both major parties for accepting austerity. A second Greek election led to a shaky coalition government in favor of bailout, although anti-bailout parties received more than 50% of the vote. (See a later chapter for creative alternatives that Greece and other countries could use to resolve the economic crisis.)

Meanwhile, Hungarian professor Ferenc Miszlivetz, currently at Columbia University, says the current crisis has deeper roots, going back eight years to the 'Big Bang' enlargement of the EU when it added ten members in central and Eastern Europe. And in 2005, referendums in both France and Holland strongly rejected the proposed EU Constitution. Miszlivetz says

> One of the core problems of the European construction… is the 'democratic deficit', i.e. the lack of legitimacy of its supranational institutions and non-elected politicians….Despite deep-going self-criticism and serious attempts at a new dialogue with EU-citizens, the Nice Treaty brought negative results: it has reinforced intergovernmentalism, secret diplomacy and lack of transparency. Europe was crying for reforms and for new long-term visions, but most of its leaders got stuck with short-sighted, national interests. It is still hard to know what the finalité of European construction will look like.

It may take a few years for Europeans to settle their political and economic problems to the point where the European Dream looks as viable as it did in 2004.

A Happy Planet

Could a government dare to set out with happiness as its goal? Now that there are accepted scientific proofs, it would be easy to audit the progress of national happiness annually, just as we monitor money and GDP.
~Polly Toynbee, British journalist

Economists, followed by politicians and journalists, still tend to rate the welfare of a nation by its GDP—the sum total of the dollar value of all goods and services produced. Yet the inventor of the GDP, Simon Kuznets, said that "The welfare of a nation [can] scarcely be inferred from a measure of national income." Recently economists have looked for a different measure that includes costs as well as benefits of growth and increased productivity.

The concept of a sustainable Earth economy that emulates nature was stimulated by Bhutan's King Jigme Singye Wangchuck who coined the term Gross National Happiness (GNH) when he ascended the throne in 1972. The idea has evolved since, influencing theories of economics. Various surveys rate countries by the degree of happiness reported by their citizens. Denmark consistently ranks at the top, with other northern European nations such as Finland, the Netherlands, Norway, Switzerland, Austria, and Belgium usually in the top ten. Canada and New Zealand also rank high. These countries are among the world's wealthiest and most productive, although New Zealand's GDP per capita in 2009 is just $30,556, quite a bit lower than that of the United States, which ranked 23rd in happiness.

Wealth is only one factor in self-reported life satisfaction. Low unemployment rates and a favorable work-life balance also contribute to happiness. Adrian White, UK social psychologist who developed the first "World Map of Happiness" says: "The most significant factors were health, the level of poverty, and access to basic education." Smaller countries with a stronger sense of national identity and more social cohesion tended to score higher. In White's 2006 study of 178 countries, Zimbabwe and Burundi ranked at the bottom, with high poverty rates, low average life expectancy, and in the case of Burundi, recent conflict between Hutus and Tutsis.

Several different indexes attempt to evaluate the relative happiness of nations. The *Economist* magazine publishes a Quality-of-Life-Index that combines results of life-satisfaction surveys with more objective factors such as life expectancy and unemployment rates. Ireland topped its list in 2009 and the USA was 13th. The Genuine Progress Indicator (GPI) is another alternative to the GDP based on the idea that when economies grow beyond a certain size [and complexity], the additional benefits of growth are exceeded by the costs. Thus the GPI takes into account the value of household and volunteer work and subtracts factors such as the costs of crime, pollution, and long-term environmental damage. At least eleven countries such as England, Austria, Sweden, and Germany have recalculated their gross domestic product using the GPI, which shows a steady decline over the last 30 years for European countries and the United States.

The Happy Planet Index (HPI) developed by the New Economics Foundation does not measure which are the happiest countries in the world but rather which ones are most ecologically efficient in supporting human well-being. HPI is based on average subjective life satisfaction, life expectancy at birth, and individual ecological footprint. Ranking countries by the *sustainability* of their efforts to achieve life-satisfaction produces a very different sort of list.

The Scandinavian countries, New Zealand, and Switzerland rank much lower than countries such as Costa Rica, Panama, and Cuba. Among more-developed nations, Australia, the United States, South Africa, Latvia, Russia, Estonia, and Ukraine rank among the bottom 40 on the HPI scale.

Models

When it shall be said in any country in the world, "My poor are happy; neither ignorance nor distress is to be found among them; my jails are empty of prisoners, my streets of beggars; the aged are not in want, the taxes are not oppressive; the rational world is my friend, because I am the friend of its happiness"; when these things can be said, then may that country boast of its constitution and its government.

~Thomas Paine, *Rights of Man,* 1791

The United States has been a model for the world in many ways—our Constitution, free public schools, conservation movement—but here we emphasize less-known models, countries that stand out because of positive innovations. These countries may not be utopian, their policies may not be adaptable to every other nation, but they do provide some models to consider.

The first is not precisely a country, but a state of India as large as many countries. Environmentalist Bill McKibben writes about **Kerala** in southern India, which has achieved an amazingly high standard of living despite a very low per capita income. Kerala deserves study as a model that breaks all the accepted rules. With 29 million people, Kerala is not even one of the wealthier states in India. In 1996 the estimated per capita income was between $298 and $350 a year or one-seventieth of the American average. Kerala's people own very little in the way of household goods. Yet the life expectancy for a Keralite male is 70, compared with 72 for a North American male. Kerala's birth rate at 18 per thousand compares with 16 per thousand in the United States. In 1991, the United Nations certified Kerala as 100% literate.

Kerala's birth rate is 40% below that of India as a whole and 60% below that of poor countries generally—yet without any coercive policies or selective abortion of female fetuses. "The two-child family is the social norm here now," says M.N. Sivaram, a Keralite representative of the International Family Planning Association. "Among the most educated people, it's one." Keralite religious reformers such as Sri Narayana Guru dedicated their lives to achieve civil rights for the lower castes. McKibben says "Kerala is now less caste-ridden than any spot in the Hindu world. It is a transition more complete than, say, the transformation achieved by the civil rights movement in the American South." Kerala has suffered from unemployment and underemployment, but new government initiatives promote sustainable development. One of these is the People's Resource Mapping Program, in which local villagers assemble detailed maps of their own area allowing them to plan the best land use.

McKibben says that Kerala might show the way not only for other poor nations but also for wealthy ones. Will Alexander of the Food First Institute notes that "Kerala is the one large human population on earth that currently meets the sustainability criteria of simultaneous small families and low consumption."

Another alternative model is **Bhutan**, a small country in the Himalayas between India and China. Bhutan has long remained independent and like Switzerland is protected by its mountains. Almost 60% of the country is forested, and one-fourth is protected as nature reserve. Bhutan's half-million people are Buddhists who tend to follow tradition, for instance in dress and architecture. The country came late to modern development and adopts it cautiously. The first

roads and schools were built only 50 years ago, and most people over the age of forty never attended school. Tobacco is banned, and television and the Internet arrived only a decade ago.

Yet Bhutan "takes pride in doing things differently" says writer Karma Phuntsho. In 1972 Bhutan's king adopted Gross National Happiness (GNH) as Bhutan's priority. The four pillars of GNH on which the prime minister reports to the National Assembly each year are: "promotion of equitable and sustainable socioeconomic development; preservation and promotion of cultural values; conservation of the natural environment; and establishment of good governance." However, things have changed somewhat since Bhutan allowed television and Internet. There are some problems in paradise. Many citizens of Bhutan want to develop democratic institutions faster than its benevolent monarch allows. Of course, from the point of view of western policy makers, Bhutan is underdeveloped.

Costa Rica is a model country in several respects. It was the first nation to abolish its army, in 1949 under President José Figueres Ferrer. The Costa Rican constitution forbids a standing military, and December 1 is designated as the *Día de la Abolición del Ejercito* (Military Abolition Day). Budget previously used for the military is now dedicated to security, education, and cultural programs. Costa Rica maintains a Public Force to perform law enforcement and border patrol, using small arms and eleven aircraft. The country has had at least 59 years of uninterrupted democracy.

Costa Rican President Oscar Arias is one of only eight heads of state who have merited the Nobel Peace Prize, for his Central American peace plan. Costa Rica is also the site of the University for Peace (UPEACE) established in San José in 1980 by the UN to provide the world with an international institution of higher education and research that furthers peace. UPEACE currently has 170 students from 52 countries. It grants graduate degrees, and publishes an academic journal, *The Peace and Conflict Review*. The UPEACE/US organization supports this university and advances education for peace in the United States.

In July, 2009 the New Economics Foundation (nef) published its second global ranking of 143 countries for the Happy Planet Index and Costa Rica topped its list. Nef said:

> Costa Ricans report the highest life satisfaction in the world, have the second-highest average life expectancy of the New World (second only to Canada) and have an ecological footprint that means that the country only narrowly fails to achieve the goal of 'one-planet living': consuming its fair share of the Earth's natural resources.

Some propose *Norway* as a model of an industrialized nation that has largely escaped damage from the global financial crisis of 2008. Using Norway's sovereign wealth fund—oil revenues for state investing—the Socialist finance minister, Kristin Halvorsen, bought up stock sold by the world's panicky investors. Norway is managing the sovereign wealth fund for the future when its oil runs out. Even with the global downturn, Norway's economy grew in 2008 by almost three percent. The country has an 11% budget surplus, and zero national debt. There was no real estate crash because Norway did not have mortgage lending excesses. Banks are for the most part healthy, represent a relatively small part of the economy, and are tightly regulated.

Norway has the second highest per capita income in the world (after Luxembourg) and Norwegians work the fewest hours of those in any industrial democracy. Norway also has the very great advantage of owning large oilfields in the North Sea making it the world's second or third largest exporter of oil. This good fortune, plus national ownership of the main natural resource and prudent policies combine to make Norway economically stable and rich.

The country of *Wales* has set up an ambitious program for sustainable development that could become an example for the rest of the world. Goals set out by the Welsh Assembly in 2009 are to be self-sustaining in renewable energy by 2025 and to produce zero waste by 2050. The aim is to transform Wales into "a One Planet nation within the lifetime of a generation." Wales is so far one of only three nations in the world that has a legal obligation to develop sustainably.

Cuba, while far from ideal in some ways*,* is a significant model in three respects: agriculture, ecology, and health care. Cuba is largely self-sufficient in agriculture, eighty percent of which is organic. It has one of the world's highest percentages of safeguarded environment and is regarded as the "biological superpower" of the Caribbean. Cuba is home to many unique species and encourages ecological tourism. Ironically, these achievements in agriculture, sustainability and nature conservation developed when the U.S. embargo prevented Cuba from imitating the Western model of development.

Also Cuba makes excellent, free or inexpensive healthcare available to all its citizens, emphasizing preventive care. Cuban statistics such as life expectancy at birth, child mortality and infant mortality rates are comparable to and slightly better than U.S. rates. Cuba's doctor/patient ratio is the second highest in the world after Italy. The health system does have very low salary for doctors, and lack of patient choice regarding some medical procedures.

Since the 1960s, Cuba has practiced 'medical diplomacy' by sending medical workers to underdeveloped countries and by giving a free medical education to foreign students from developing countries. After Pakistan's devastating earthquake in October 2005, Cuban doctors treated over 1.5 million Pakistanis. After Haiti's earthquake in 2009, Cuba sent 600 medical workers. The Latin American Medical School, set up in 1999, has graduated over 7,000 physicians from 45 countries, including a few from the United States.

When *Germany* decided in 2011 to phase out all nuclear energy by 2022, Chancellor Angela Merkel said "We can be the first industrial country to make the transition into an age of highly efficient and renewable energy." The country had already doubled its use of renewable energy in the previous decade. Not everyone wanted to believe that Germany could reach its goal of doubling renewables again in another 10 years, from 17 to 35% of the energy mix, but the nation has a tradition of technical prowess that made this a credible goal.

New Zealand, under former Prime Minister Helen Clark, pledged in 2007 to boost the renewable share of its electricity from 70 % to 90% by 2025 (much of it is currently produced from hydro and geothermal sources). The plan is also to expand forested areas by about 250,000 hectares by 2020, to sequester carbon.

Nunavut and Greenland together form a developing Inuit nation (not nation-state) of indigenous people who have lived in the Far North for millennia. Nunavut is Canada's newest federal territory, larger than Alaska. Meanwhile the Inuit of Greenland, which shares island borders with Nunavut, are an autonomous part of Denmark and moving toward full political independence. Inuits share beliefs in communal ownership, a strong environmental ethic, and the power of women. Together this "First Nation" of about 300,000 people can become an example of how indigenous peoples blend modern life and ancient folkways. This is especially important now that the Arctic is one of the first areas impacted by climate change and also the newest frontier for international energy and mineral exploitation.

Iceland is proposed as a model country for women, having come closest of all countries to closing the gender gap. The World Economic Forum for three consecutive years put Iceland at the top of the list for having most equality between men and women. They took into account politics, education, and health indicators as well as employment. Iceland was one of the first

countries to give women the right to vote (in 1915) and currently has 43% female parliament members. The country's president from 1980 to 1996 was Vigdis Finnbogadottir, the world's first democratically elected female head of state, and the current prime minister is also a woman.

Japan could be the first industrial country to develop a no growth, steady state economy, says Roland Kelts, a half-Japanese American author. Japan adopted positive ideas from U.S. occupation but in the last decade imitated the less positive American "winner-take-all" mentality with destructive results to its economy and society. But paradoxically, says Kelts, being at the forefront of socio-economic trauma and transformation may enable Japan to show Western nationals where they're going wrong. Waseda University Professor Norihiro Kato agrees: "Freshly overtaken by China, Japan now seems to stand at the vanguard of a new downsizing movement, leading the way for countries bound sooner or later to follow in its wake."

Written just before the devastating earthquake, tsunami, and nuclear meltdown of February, 2011, Kelts's message may be even more applicable today. He points to a 200-year era in Japanese history—the Edo period from the 17th to 19th century—of very limited economic growth and values of frugality, self-control, and continuity. This 'way of the samurai' might have relevance not only for Japan but for the rest of the world.

After economic crisis in 1997, the king of *Thailand* introduced a 'sufficiency economy' to be a Middle Path during an era of globalization. Without resisting modernization, the plan encourages self-sufficiency and cooperation. However the country is still adapting to this plan; in one unfortunate case the Bank of Thailand shut down a village barter system.

In 2008, *Ecuador* approved a constitutional amendment protecting the rights of Pachamama, the name for Mother Earth in an indigenous language. It is the first and so far only nation to write the non-human into its constitution. (Bolivia is considering similar laws.) Ecuador was also first to formally choose against oil exploration in 2007 when President Correa said he would not drill for oil in Yasuni National Park. Scientists warn that about three-fourths of Earth's fossil fuel reserves must be left in the ground if we are to avoid dangerous climate change.

In 2012 *New Zealand* gave the river Whanganui the rights of personhood.

Certain identifiable groups or islanders are models of human *longevity*. These people are much more likely to live into an active old age in their 90s. The Hunzas of the Caucasus, those who live on the islands of Okinawa, Ikaria (Greece), and Sardinia, the Nicoya Peninsula of Costa Rica, or in the Seventh Day Adventist community in Loma Linda, are all favored with longer life and much lower rates of heart disease, cancer, and dementia. The rest of us would do well to adopt some of their patterns of diet, exercise, local economics, and community bonding.

In a turbulent world, *stability* is highly valued. The Failed States Index lists the following countries or regions as the most stable in the world, so in that sense they are models: Australia, Ireland, New Zealand, Scandinavia, and Switzerland. Curiously, all have long coastlines except for Switzerland, which has no coastline—but is very mountainous.

On the less positive side, John Cairns, Jr. says that currently "no country would qualify as a robust model of sustainable practices" although Kerala might be a candidate if more were known about it. He is searching some way to measure a list of sustainability attributes that could actually compare each nation or ecoregion with others. With such a sustainability index, we would be able to see the best models for the rest of the planet. Cairn's list of 20 attributes includes these: Population stabilized at or below carrying capacity; resources directed toward sustainable practices rather than war or preparation for war; ecological footprint size not more than 20% above the global norm; use of fossil fuel heavily taxed; at least 25% of land mass allocated to the accumulation and protection of natural capita [wilderness].

Cairns states that if humankind were to continue its present unsustainable practices for the rest of the 21ˢᵗ century, the consequent collapse would demonstrate that the human mind was an evolutionary failure.

Best Practices, Ecocities and Ecovillages: A United Nations program of "100 Best Practices" (BLP) promotes information-sharing about each country's local programs that represent models. The UN also fosters city to city cooperation to spread these successful ideas in both developed and developing countries. For instance, the Japanese steelworks city of Kitakyushu in the course of rapid industrialization became very polluted and unhealthy. Through new technologies and partnerships between local government, citizens, universities, and private companies, Kitakyushu managed to turn itself around to become an "environmental city." Now Kitakyushu works in cooperative projects with communities in other countries to further sustainable practices.

A number of world cities may be described as 'ecocities' because they reduce their reliance on surrounding land for necessities such as food, water and energy, while minimizing the waste and pollution they put out. These developing cities include Masdar, in Abu Dhabi, designed to be zero-carbon and zero-waste despite its location in the oil-rich Middle East, and three cities in China: Tianjin, the MenTouGou district of Beijing, and Dongtan, one of the largest, expected to be home to half a million people. Sseesamirembe is a 200-square-mile ecocity straddling the border between Uganda and Tanzania. Britain plans to build 10 ecocities between now and 2020.

Smaller intentional communities committed to living sustainably include Auroville in India, Findhorn in Scotland, Ecoversidade in Brazil, EcoYoff in Senegal, Thieolego in South Africa, Lammas in Wales, and Huehuecoyotl in Mexico. About 160 people live in the Ecovillage at Ithaca, New York, and about 3,000 in Mbam, an ecovillage in Senegal where residents restore and manage the mangrove forest ecosystem. Another notable ecovillage is Crystal Waters Permaculture Village in Australia, which has already improved the land through permacultural principles and in 1996 received the UN World Habitat Award. Ecovillages number about 500 in North America and thousands worldwide.

Strategies

The moment you aim for results, you are in the realm of strategy.
~Robert Greene, *The 33 Strategies of War*, 2006

If there is any advantage whatsoever to the long and bloody history of humanity's wars, it is that these conflicts develop the focus and skills that might apply to reaching other sorts of objectives. Robert Greene insists that "The strategic ideal in war—being supremely rational and emotionally balanced, striving to win with minimum bloodshed and loss of resources—has infinite application and relevance to our daily battles." Greene counts Gandhi as a strategic warrior and says that Gandhi himself called nonviolence a new way of waging war.

The contrast between Western and East Asian approaches to warfare is relevant to other objectives. Greene says that *attrition warfare* is a deeply engrained idea in Western thinking ever since ancient Greece. In attrition cultures "thoughts naturally gravitate toward how to overpower problems, obstacles, those who resist us." People are drawn to the drama inherent in any confrontation. Greene says people in such cultures tell stories that lead to "battle-like moments" and include a moral message. Writing about economics, David Graeber notes the "unusually militaristic conception of market behavior characteristic of the Christian West." U.S. politics

have lately become more like a war, which increases our tendency to frame social and political issues in terms of either/or, black and white.

In contrast, East Asians have preferred *maneuver war*. This is a way to make confrontations less costly in lives and resources. Greene lists the four main principles of maneuver war: craft a plan with branches; give yourself room to maneuver; give your enemies dilemmas, not problems—make their every option bad; and create maximum disorder. The practitioners of maneuver war regard wars of attrition as lazy and primitive. Their great philosopher of strategy was Sun-tzu, who wrote *Art of War* in the fourth century B.C. Sun-tzu said: "To win a hundred victories in a hundred battles is not the highest excellence; the highest excellence is to subdue the enemy's army without fighting at all." Maneuver war recalls martial arts such as judo or aikido in which one uses the enemy's greater strength to his disadvantage.

The two ways are represented by the poet Homer's contrasting warriors, the powerful but stolid Ajax and "wily Odysseus" who used craft and stratagem. The way of Odysseus did not replicate as well in the West. A series of novels based on historical research (*Time's Tapestry)* shows scenes of attrition warfare from the Romans through the Vikings: two lines of men face each other with swords and shields, hacking away until one side flees from the bloody mess and those still standing claim the glory. The siege also belongs to attrition war mentality. Extreme demonization of one's enemy is part of this mind-set.

Let's not become too attached to the metaphors of warfare and enemies since our 'enemy' may be ignorance or apathy, CO_2 emissions, or war itself. Yet admonitions from famous strategists such as Sun-tzu, Napoleon Bonaparte, or Carl von Clausewitz can apply to politics and environmental campaigns. Among Greene's "Six Rules for Strategic Warriors" are these: "Look at things as they are, not as your emotions color them [critical thinking." Another rule is to "Elevate yourself above the battlefield" or in other words, to focus on the long-term and the big picture. Greene says "Great strategists do not act according to preconceived ideas; they respond to the moment, like children." That is, they 'participate consciousness' and they think more creatively. They are not always fighting the last war.

So-called *wicked problems* are complex problems in design, public planning, and social policy that are difficult to solve because they're unique, have no right or wrong answer, are connected to and symptoms of other problems, and must be solved without any chance to use trial-and-error. Any solution depends on how the problem is framed. The typical strategy that defines and analyzes a problem step-by-step doesn't suit wicked problems. Jeff Conklin says the problem may not even be understood until the solution is formulated. One way to work on wicked problems is to involve all stakeholders in a collaborative process. This can be time-consuming but gives better results than narrower or more top-down approaches.

A commonly expressed strategy of sorts is to do nothing, to cultivate one's own garden, to wait for things to get worse before they get better because things have to get very bad before people join together to change them. This undirected 'strategy' is expressed in the quip "Don't vote, it only encourages them." While this may be the only option in some cases, it is not the strategy I would choose first, and can in fact lead to changes for the worse.

David Korten, American economist and activist, says that making deep changes requires a three-part strategy: "One is *change the cultural story*. Two is *create a new reality*. And three is *change the rules*." He himself works on all three at once.

The Transition Movement: A grassroots strategy that recently developed and is spreading rapidly is the Transition Town (or village, city, city district, or island.)The idea is to empower

people to deal with the combined effects of climate change, the decline of oil, and now, the global financial meltdown and global food crisis. The project encourages sustainable living, "re-skilling" in lost arts, and neighborhood self-reliance, with initiatives such as community gardens, local currencies, bread-baking or bicycle-repair workshops, or signing up 50 people to buy solar hot-water heaters in order to purchase them at a discount. Each community develops its own initiatives, which UK Transition leader Jennifer Gray says are "a tool kit, a template for how to respond, practical projects people can get their teeth into."

The movement was founded in Kinsale, Ireland and spread to England by permaculture designer Rob Hopkins in 2006. It has become a cultural phenomenon in the UK, where even a long-running soap opera has a story line based on Transitioning. By September 2008 there were one hundred official Transition Towns (or districts or cities) in Ireland, the UK, Australia, New Zealand, Japan, the United States, Italy, and Chile; by May 2009 there were 160 initiatives and several more countries. One reason for this viral spread is that the movement is positive and empowering. Founder Rob Hopkins likes to say "It's more like a party than a protest march."

The Transition movement is taking a little longer to catch on in the United States. One hurdle is the car-based culture; another is the sheer size of this country. Boulder County became the first Transition Initiative in North America in May 2008, joined since by hundreds more. So far the movement is mostly under the radar for U.S. media, yet the Transitions United States website says that in April 2009 about 700 communities were in various stages of becoming Transition Initiatives. Virtually every state has its own Transitions site and the movement makes good use of social networking technologies.

A creative convergence of the Transition movement, Open Source, and A-T (Appropriate Technology) is the Open Source Ecology project that is developing and open-sourcing the blueprints for a "civilization starter kit." These are the basic, do-it-yourself tools and machines for a sustainable, simple, but comfortable civilization. Founded in 2003 by a young Polish American physicist, Marcin Jakubowski, the project is a network of farmers, engineers, and other supporters. The machines are modular, low-cost, do-it-yourself, and easily serviced by the user. Closed Loop Manufacturing means that metal can be recycled, allowing cradle-to-cradle manufacturing. The 50 basic industrial machines or technologies that compose the Global Village Construction Set include, for instance: Sawmill, Well-Drilling Rig, Wind Turbine, Drill Press, Bakery Oven, 3D Printer, Baler, Metal Roller, and Solar Concentrator.

In another effort related to Transitions, a Google group is working on a "Commoning Game…to create and empower a global constituency to practice commons-ownership and governance of a new currency that can out-compete any corporate model, and fund the development and implementation of further capabilities, including a more resilient Commons."

Games and Planet Craft

We need to imagine planetary-scale solutions and disperse them as far and wide as possible.
~Jane McGonigal, *Reality Is Broken*, 2011

With our burgeoning numbers, our big brains, and our powerful technologies, humans have assumed Olympian powers. As Stewart Brand said, "We are as gods and have to get good at it." In other words, since we are already steering evolution, we now must learn how to do it better. Jane McGonigal, a game developer, says that computer games have the potential to teach us planet craft: the art and skill of thinking large-scale and long-term, taking responsibility for the

Earth and human survival over centuries to come. We've already suggested that in order to meet existential challenges, we need to develop strategies. Many ancient games involve strategy and thus help to develop strategic thinking. Chess, Go, bridge, checkers, poker, and many other board or card games depend to some degree on decision-making rather than luck, usually employing a turn-based strategy (TBS). So do video/computer games.

Computer gaming and simulations have developed in many directions over the last few decades. The child's ancient "let's pretend" led to role-playing games (RPG) such as Dungeons and Dragons. In these games participants assume the roles of fictional characters and collaborate in creating a story. Multiplayer online games (MOG) can be played with players in other countries using a game server over the Internet. Massively multiplayer online games (MMOG) such as World of Warcraft support hundreds or thousands of players simultaneously. They usually feature a persistent world, a permanent virtual world.

Many serious interactive simulations exist such as pilot or auto driving. There are 'serious games' with educational purposes and others that are instrumental, used as marketing devices, or war games played by military leader. *Futurist* magazine notes a "gamification" trend in which businesses and government entities use games to increase feedback from customers, engage employees, and generate more ideas.. The gamification trend suggests that as a society, we are trying to increase our strategic thinking skills. The vast majority of computer/ video games have so far reflected human urges to compete and to gain power. But strategic and role-playing games and "what if" scenarios can also be put into the service of peace and sustainability.

For strategizing global and multi-generational problems, McGonigal looks first to a genre of games known as 'god games' such as Will Wright's "The Sims" and "Spore," Sid Meier's "Civilization,"series, and Peter Molyneux's "Black and White." These are "world- and population-management simulations that give a single player the ability to shape the course of events on earth in dramatic ways, over lifetimes or longer." McGonigal says: "What all of these god games have in common is that they encourage players to practice the three skills that are critical for real planet craft: taking a long view, ecosystems thinking, and pilot experimentation.*"*

Taking things a step further, McGonigal has helped start a new genre of online games she calls massively multiplayer foresight games or forecasting games for short. This genre began with a project called "World Without Oil: Play It Before You Live It," first conceived by game developer Ken Eklund and funded by the Corporation for Public Broadcasting. Playing WWO in May 2007, two thousand gamers dealt with a peak-oil scenario in which individuals and businesses faced shortages of petroleum. Eklund said in his proposal:

> No one today has a clear picture of oil availability or what will happen when demand inevitably outstrips supply. That will largely depend on how well ordinary people respond to the crisis. Until now, no one has ever thought to ask them what they might do. WWO will evoke the wisdom of crowds in advance, as players work together to…figure out the best ways to prepare, cooperate, and collectively create solutions if and when a real peak-oil shortage happens.

WWO was the first of several such forecasting games that connect people to real-world problems. In 2008 another multiplayer game designed by McGonigal—Superstruct –posited five superthreats such as a new pandemic and increasing attacks on the world's cyber infrastructure, all coming together in 2019. Eight thousand people played Superstruct, working together to try to find ways to prevent this convergence of disastrous trends. Their contributions formed the basis of a ten-year forecast by The Institute for the Future. More forecasting games are in the works.

Another incubator of problem-solving, serious games is Games for Change, with the first European Festival held in Valenciennes, France in 2011.

The Youtopia Game

Paradise is exactly like where you are right now...only much, much better.
~Laurie Halse Anderson, fiction writer

How could we raise our human being consciousness? What would encourage the bonding of so many millions of people to cooperate and use their creativity to meet the challenges and dangers we face together? How could seven billion people make their wishes known about their ideal future—an informal yet global referendum? Consider a fictional suggestion which is at least technically possible: *a worldwide survival/thrival game.*

About twenty years ago I wrote an alternate history novel, *The Youtopia Game*. The plot included a serious game that informed virtually everyone about planetary conditions and survival issues. Participating in this youtopia game was very popular. No one and no country wanted to be left out. The 'game' then surveyed millions of people to discover their preferred visions of the future. Remember that *TYG* was written way back in 1991 with the home computer revolution just begun, before the Internet took hold, long before Facebook and Twitter, and when most of the god games and massively multiplayer games were still gleams in the game designer's eye.

The novel's game presented simplified, often animated images about a number of situations affecting the species as a whole such as population increase, disappearance of forests over the centuries, melting glaciers, and the worsening condition of the world's oceans. Such information was graphically presented by computer, television, video, and films, in a number of languages. This may not fit everybody's definition of a game, since there was no interaction between players. However it was only a few steps away from today's serious games.

One model for this could be the BBC program "Two Seconds to Midnight" that appeared in 1993 and told the story of planet Earth from 4.6 billion years ago to fifty years in the future. If this broadcast took one entire day, humans would appear only in the two seconds before midnight (thus the title). For the youtopia games, one film could show the animated story of humans from the first hominids 4 million years ago, while another could view human history of the last five or six thousand years, including major civilizations on all the continents. In *TYG*, transmitted information was vetted for objectivity and scientific accuracy by international groups of scientists and other scholars. The game included a display of the world's main ethical statements, such as the several dozen versions of the Golden Rule.

The second part of the game involved a worldwide, in-depth survey by trained volunteers of a significant sample of the world's people, ideally including all but a few isolated or self-isolated indigenous peoples who would not or could not partake in it. The survey, overseen by the UN, included children who seemed old enough to answer the questions thoughtfully. Some of those surveyed were also videotaped, their images fed back to the world of people watching. The aim was to build species-consciousness and clarify our planetary family's needs, desires, and visions.

Since 1991 many types of computer games have become wildly popular, some of them managing artificial species or civilizations, and others trying to meet the world's actual, urgent problems. As as yet they lack utopian qualities in their world-building and none have attempted to evoke a worldwide referendum, virtual or otherwise. But developing potentials are making the youtopia games an actuality.

Chapter 12
Sustainability

The frog does not drink up the pond in which it lives.
~Chinese Proverb

In 1987 the UN's Bruntland Commission produced a report called "Our Common Future" which described sustainable development and defined sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Other definitions of sustainability all have to do with living within the limits of the Earth and understanding the interconnections between nature, society, and economy. Although the term has turned into a buzz-word, that doesn't diminish its vital importance. A symbol for sustainability could be the sign that says "Think Ah$_{ead.}$"

Sustainability is supported by 7th generation thinking. According to the 2005 Environmental Sustainability Index (ESI), Finland, Norway, Uruguay, Sweden, and Iceland were rated as the five most "sustainable" countries. At the time, the United States ranked 45th but Americans have become more active in this area during the last several years.

You can't really separate the various aspects of sustainability such as agriculture, population, forests, oceans, fresh water and wetlands, energy resources, mineral resources, and architecture, which are all interlinked. This chapter focuses on sustainability in terms of agriculture and the 'Re Family.' Other chapters discuss individual lifestyles, sustainable cities, the population factor, and over-consumption.

Sustainable Agriculture

Humankind—despite its artistic pretensions, its sophistication, and its many accomplishments—owes its existence to a six-inch layer of topsoil and the fact that it rains.
~Source unknown

My mother's people lived in a small Wisconsin town called Black Earth. The dark loam went down about a foot, and everything grew tall and lush. Later on, trying to raise a garden in the rocky soil of the Ozarks, I fully realized how blessed humans are to have good soil—and how important it is to keep what we have. Unfortunately, on the world scale, as much as 20% of cropland and 70% of rangeland has been degraded so it is no longer productive.

Ecologist David Pimentel reports that soil from the world's croplands is being eroded by wind and water ten to forty times faster than it is being replenished. The main causes are overgrazing, overplowing, and overcutting of trees. Lester R. Brown of the Earth Policy Institute describes giant dust storms in eastern China and South Korea. Koreans have learned to dread "the fifth season" of the dust storms from China, which can close schools and airports, and send people to the doctor because of problems breathing. Dust storms are increasing in Africa and the Near East, in countries such as Nigeria, Afghanistan, Iraq, and Iran.

Add drought to dust storms and you get dust bowls. Brown says giant dust bowls are only about a century old. The 1930s Dust Bowl across American and Canadian prairielands came mainly from plowing huge areas of grassland to plant wheat, and then failing for decades to rotate crops, use cover crops, or periodically leave fields fallow, all traditional techniques to prevent wind erosion. A similar Dust Bowl resulted in the Soviet Union in the late 1950s after

the Soviets plowed up an enormous area of grassland, also to plant wheat. Brown says two more giant dust bowls are forming in the Asian heartland and central Africa.

Pimentel says "Controlling soil erosion is really quite simple. The soil can be protected with cover crops when the land is not being used to grow crops." Shelter belts of trees, woodlots, and windbreaks protect the land on a larger scale. To halt desertification, Algeria is planting much of its cropland in perennial plants such as fruit orchards, olive orchards, and vineyards. The African Union has begun the Green Wall Sahara Initiative to plant a band of trees 4,300-miles long and nine miles wide stretching across Africa.

Brown proposes a world-wide initiative to convert 10% of all cropland, the portion that is highly erodible, to grass or trees. In the United States, the Conservation Reserve Program pays farmers to put this most vulnerable land into permanent vegetative cover and costs about $2 billion yearly. Brown says extending this model to other countries would cost the world $16 billion annually. A second initiative providing incentives for adopting conservation practices on cropland would bring the world budget to $24 billion—a small fraction of the budget for weapons and certainly money well-spent to protect the world's topsoil.

Since ancient times, overgrazing sheep or goats has led to the destruction of land, for instance, around the Mediterranean. To protect world rangelands, Brown says flocks and herds need to be smaller, allowing plants to regrow. It is important to offer alternatives for people in poor countries so they do not overgraze their animals, clear forests to grow crops, or remove crop residues for cooking fuel that would be better used to maintain soil fertility in the form of compost or mulch. This includes innovating and distributing more efficient clay stoves or solar cookers, support for local family planning, and introducing new crops for both human food and animal forage. Instead of clearing forests, people can use them as sources of food and other products for human use.

Another general guideline to sustainable agriculture is to cut back, way back, on animal agriculture. Health expert Kathy Freston lists some of the environmental effects of raising farm animals, noting that one calorie of animal protein requires more than 11 times as much fossil fuel to produce as does one calorie of plant protein. She mentions the vast quantities of animal excrement produced by farm animals, 16.6 billion tons per year, a major cause of air and water pollution, 'dead' zones in coastal waters, and human health problems. A Worldwatch publication says that because half the grain and hay fed to American beef cattle is grown on irrigated land, it takes more than 3,000 liters of water to produce a kilogram of beef. Most of these problems are due to the *scale* of industrial agriculture or Concentrated Animal Feeding Operations (CAFOs) that raise thousands of animals in a single operation, under unnatural conditions, feeding them grain. In the USA, fields of corn, used mostly for animal feed, consume about 40% of the country's nitrogen fertilizer and more herbicides and insecticides than any other crop.

Grazers can also ruin U.S. land if ranchers overstock or do not use good grazing practices. Alan B. Durning and Holly B. Brough of Worldwatch say that 50% of U.S. rangeland is already severely degraded, its carrying capacity reduced by at least half. We discuss more implications of animal agriculture, especially cattle, in the chapter about global warming.

The term *sustainable agriculture* refers to farming practices that use fewer or no chemical inputs (which are largely petroleum-based) and depend instead on biological systems. These farming practices are alternatives to modern industrial agribusiness, but in one sense they are not 'alternative,' since farming without chemicals was the norm for several thousand years. These practices are more sustainable in at least two ways: first, they do not depend on petroleum which

is declining in supply and rising in price; second, and most important, they keep the land healthy and productive instead of, in effect, strip-mining it.

Most people are familiar with organic food but at least six distinct farming systems used in the United States emphasize biological systems rather than chemical inputs for supplying soil fertility and pest control. *Organic farming* avoids the use of synthetic chemicals as fertilizers, pesticides, growth regulators, and additives to livestock feed. Instead it relies on crop rotations, green manures, animal manures, legumes, biological pest control, and other non-chemical methods. *Biodynamic farming* (which evolved in Europe) is similar to organic farming but emphasizes the integration of animals into the system to create a nutrient cycle and also includes an awareness of spiritual forces in nature. The farm is managed as a living organism and receives the label 'Certified Biodynamic.' *Nature Farming* (from Japan) resembles organic farming but strongly emphasizes healthy soil through composts rather than organic fertilizers.

Other methods may be termed 'low-input.' *Eco-agriculture* or 'Biological' farming is based on a specific soil test and uses selected chemical fertilizers and limited amounts of herbicides and insecticides. A large commercial fruit and vegetable farm in California reduced their annual pesticide bill from $500,000 to $50,000 yearly after adopting this method of farming. *Regenerative agriculture*, promoted by the Rodale Institute, uses both low-input and organic farming systems with the aim of building on nature's own abilities to enhance soil fertility and cope with pests. Many USDA Extension Services now provide support for low-input practices such as integrated pest management (IPM), living mulches, and cover crops.

Permaculture or permanent agriculture is not only a system of agriculture, it is a "design toolkit for human habitation based on an observation of how ecosystems themselves interact" according to its founders, Australians Bill Mollison and David Holmgren. They developed permaculture in the 1970s to include the design of human habitats, forest gardens, attention to the natural flows of water (Keyline design), ecological food production systems that involve interrelationships between humans, animals and plants, economic considerations, and more. For permaculturists, the whole is greater than the sum of its parts. Well-known environmentalist Dr. David Suzuki has said, "What permaculturists are doing is the most important activity that any group is doing on the planet." Permaculture could be considered a new paradigm.

Sustainable agroforestry or *Permaforestry* integrates trees with agriculture, people, and animals in one ecosystem design. Forest farming was actually practiced for thousands of years by aboriginal peoples before colonizers reduced forests and introduced modern agricultural methods of intensive farming, monocultures, and machinery. Agroforestry supports a wide diversity of birds, insects, and other animals. Some products that can be produced from living forests or by sustainable harvesting are nuts, maple and other syrups, wild mushrooms, wild berries and fruit, honey, herbs and other health products, fiddlehead ferns, decorative greenery, arts and crafts supplies (grapevines, cones), rubber, oils, and resins.

All these sustainable agriculture systems represent a world view in sharp contrast to the predominant model of industrial agriculture. The differences have been summed up as a series of paradigms: decentralization vs. centralization; independence vs. dependence; community vs. competition; harmony with nature vs. dominance of nature; diversity vs. specialization; and restraint vs. exploitation.

The Re Family

If it can't be reduced, reused, repaired, rebuilt, refurbished, refinished, resold, recycled or composted, then it should be restricted, redesigned or removed from production.
~Berkeley Ecology Center

Everything should have a second use. Or else don't make it in the first place. Jared Diamond says that a more efficient form of consumption by the one billion people in the developed world—who consume and produce waste at a rate 32 times greater than the world's poorest—would give us a much better chance to avoid planetary collapse. The Grassroots Recycling Network (GRRN), an international group advocating Zero Waste, estimates that with present technologies we could reduce 90% of what goes into landfills. But GRNN says U.S. markets are skewed by subsidies and incentives that favor extraction and wasteful practices. We need to end those perverse incentives. Andi McDaniel of the Zero Waste movement says its ultimate goal is to eliminate the concept of waste entirely.

Japan is a model of recycling, sending only 16% of solid waste to landfills. Special facilities recycle home appliances such as washing machines, television sets, and refrigerators.

Netherlands, Germany, and Sweden have almost eliminated landfills by combining recycling with a new generation of pyrolysis plants that claim to be low-emission unlike the garbage incinerators that were heavily promoted in the USA a few decades ago (none have been built since 1997 because of public opposition). However, the Global Anti-Incinerator Alliance (GAIA) disputes this and also notes that European countries with high rates of waste incineration typically recycle less.

The United States has steadily improved recycling rates, reaching about 34% in 2010, and is a leader in Zero Waste policies such as curbside recycling. GAIA commends the states of Massachusetts, Rhode Island, Delaware, California, Wisconsin, and Washington, along with the cities of Oakland, Los Angeles, Seattle, Austin, and especially San Francisco, which has achieved a 78% recycling rate of all municipal and commercial waste, creating over 1,000 jobs in the process. San Franciscan Sven Eberlein says his city is on track to become the world's first zero-waste city by 2020—and describes how they've done it so far, including mandatory composting, big financial incentives to those who voluntarily reduce their trash volumes, and an Artists-In-Residence program that creates junk art.

Not so oddly, the practices that help achieve Zero Waste quite often begin with the prefix *re* such as those listed above. (You could also add *repurpose, restore, remanufacture,* and *remake*). To make up for the energy used to produce something recyclable, the product should find the highest possible use the second time around, so one of these *re* words may be more advantageous than another in terms of saving energy and material. For example, Brenda Platt of the Institute for Local Self-Reliance notes that refilling glass bottles (reuse) as dairies used to do with milk bottles, is a higher use than making 'glassphalt,' an asphalt alternative used for several decades.

The 'waste hierarchy' classifies waste management by the desirability of each strategy. At the top of the pyramid is preventing waste altogether (such as not buying it in the first place). The next best option is to reduce waste to the smallest possible amount (source reduction). To achieve either may require re-thinking the entire process of industrial production. William McDonough (an architect) and Michael Braungart (a chemist) call for a new industrial revolution in *Cradle to Cradle: Remaking the Way We Make Things.* This manifesto says we should imitate

nature in all that we make, with materials circulated indefinitely. Its first principle is "Waste is food." The authors are design consultants for a number of companies and the city of Chicago.

The next most desirable option is for the consumer to reuse or repurpose the manufactured object. For instance, glass jars may be reused for their original purpose as containers, or they may be repurposed as vases, drinking glasses, or terrariums. Some arts or crafts are based, or can be based, on repurposing, such as mosaics and quilting. Businesses built on reuse include thrift and resale shops, secondhand furniture stores, flea markets, and used car lots. The online group Swap.com trades books, CDs, movies, and videogames among its over one million members.

As the economic collapse continued in late 2008, owners and operators of local repair shops—household appliance services, auto mechanics— reported between five percent and 30% more business than the previous year. The Freecycle Network is a non-profit organization with a worldwide network of groups that give away free items for reuse or recycling. The object is to keep things out of the landfill and also to promote the idea of gift economics. By 2008 TFN had over five million members in 85 countries, and other groups have copied the idea.

One step above recycling is the strategy of remanufacturing: businesses deliberately design items so that their materials or components can be returned to industrial use. For example, British design consultant Casper Gray is working on a mobile phone handset that can be upgraded or reused. One idea plans for 'active disassembly' so the product can be taken apart easily, saving the insides. In a second option owners upgrade their own phones by replacing outdated parts with newer ones. Another researcher, Martin Goosey, is working on a technique to reprogram old mobile phones for devices that monitor home energy or water use. Professor Goosey notes that "Electronic waste is Europe's fastest growing waste stream."

This 'technotrash' is a growing problem in the United States as well, leading to recycling services and businesses such as GreenDisk and others. There is a great need for remanufacture and greener recycling options of electronic waste. The PBS investigative team "Frontline" on June 23, 2009 showed how toxic e-waste is ending up in less-developed countries such as Ghana, China, Vietnam, and Malaysia where poor people process it for metals to sell. They work without safeguards for their health, either unaware of the danger or so desperate for income that they disregard the toxic fumes. Another problem is that criminals are able to find usable information off hard-drives from the First World.

To remanufacture or recycle consumer goods, some manufacturers have instituted product take-back. The concept of Extended Product Responsibility (EPR) is well-established in Europe, which has very limited landfill space, although it is new to the United States. Eventually this can lead to cradle to cradle, 100% recycling where every part of a product can either be re-used in new products or else broken down into biodegradable molecules. In other words, Zero Waste.

Curbside recycling is still an effective way to keep mountains of plastics, glass, paper, and cans out of landfills. It also saves energy. Recycling in general has become a massive industry. According to *E Magazine*, in 2007 recycling accounted for about two percent of U.S. GDP, earned $236 billion, and employed over a million people. Worldwide there are thousands of recycling companies, some of them publicly traded on stock markets. Rona Fried says the real action is in industrial recycling, which saves companies the cost of virgin raw materials.

Again, from the top, the most desirable way to deal with our household waste is A) Prevention, with less consumption; B) Source reduction (including cradle to cradle remaking); C) Reuse or repurposing; D) Remanufacture E. Community and industrial recycling. Many people, unaware of the several possible strategies, call them all 'recycling.' Composting is in a class of its own. McDaniel says that more than 60% of municipal waste could be composted,

providing free fertilizer for the family garden or front yard. (Perhaps for apartment dwellers the city or landlords could provide communal compost bins in the parking area, the compost to be used on landscape plantings.)

Radical Transparency

We want products that are the easiest to recycle, that are the least toxic, and the most cradle-to-cradle in terms of raw materials.
~Captain Charles Moore, interview by Nell Greenberg

Captain Charles Moore was the first to discover the Pacific garbage patch, a huge area in the Northern Pacific where tiny bits of plastic particles weighing together as much as 100 million tons have been trapped by the currents. Captain Moore is a surfer and scientific researcher as well as a sea captain. He says the patch is growing rapidly and by 2008 its composition was 46 plastic to one part plankton. The plastic carries with it petroleum and industrial chemicals. Sea creatures eat the plastic and then humans eat the fish that feed on smaller creatures, with unknown health effects. About 270 species are at risk. "We know that [plastic] is invading the entire circulatory system of animal life that is exposed to it," says Moore.

Captain Moore says the very visibility of the Pacific garbage patch makes us aware that there must be changes in production throughout the world. Moore says

The public is not given the information it needs to make good consumer choices. It doesn't know that the plastic carries contaminants that are increasing their body-burden of industrial chemicals; it doesn't know that there is no recycling for these products; it doesn't know that many of these products will not even make it to a landfill—that they will end up in the ocean. At a certain point, the problem gets so big you [have to] rethink the whole system.

There may soon be a tool to enable this rethinking. Daniel Goleman points out in *Ecological Intelligence* that every product involves hundreds or thousands of processes. A glass jar, for example, has 1,959 links in its supply chain and 659 ingredients. During the various processes, about 100 substances are released into water, 50 or so into soil, and 220 into the air. Because of this complexity, consumers could never know the true environmental and health impacts of things they buy or use. As a result, "What we now think of as 'green' is a bare beginning."

But a new field of study developed in the last decade is able to measure quite exactly the effect on nature of manmade things. Industrial Ecology combines chemistry, physics, engineering and ecology. Using the method of Life Cycle Assessment, industrial ecologists systematically analyze manufactured items, their components, and all the industrial processes that produced them. Goleman says LCA can then "measure with near-surgical precision their impacts on nature from the beginning of their production through their final disposal."

Goleman sees industrial ecologists, along with others in fields like environmental health, as leading us into a new awareness—radical transparency. When this information becomes fully available to the public it will transform the marketing environment. Consumers will at last have the information they need to make rational and ethical decisions. Radical transparency will end greenwashing and will force manufacturers to produce the greenest possible consumer items. LCA can take into account a product's adverse effects in every sphere, from its emission of greenhouse gases, to its effect on the health of humans and other species, to the welfare of the workers who make it and dispose of it.

Radical transparency can lead to ecological intelligence, a collective understanding of how the products we buy impact natural systems. It helps humans to adapt to our ecological niche in the same way that indigenous knowledge guided our ancestors and still guides those who don't live with high technology. Forerunner Debra Lynn Dodd gathered such information in *Sustaining the Earth* (1994) which devoted a chapter to Life Cycle Assessment and listed directories of greenstores, mail-order catalogs, and organizations working in the field of healthy and sustainable products. Radical transparency begins in LEED standards, an organization called GoodGuide, and a European group that is developing a "sustainability Wikipedia."

Supply chain transparency is a growing trend. A New Zealand firm that produces wool outerwear has a code on each label which if entered on the company's website can tell the buyer which farmers grew the wool that went into the garment. Similar code information is available from several other companies. There are green search engines and green search directories such as Ecocho and Ecosearch. Social networks and digital tools can increase the viral spread of information uncovered by industrial ecologists and environmental health experts.

In the meantime, we must make choices and one no-brainer is to reduce use of conventional plastics as much as possible. Goleman says that in the USA alone, 88 billion plastic bags are produced in a year. Paper bags use even more energy and pollute more water in their production than plastic bags do. 'Bring your own' canvas bag is a good option. McDonough and Braungart say an even better option would be *edible* grocery bags. Some companies are developing greener plastics made of plants instead of petroleum.

About one-third of all waste is paper and cardboard. We can reduce paper waste by going digital although e-waste is a growing problem and computers use electricity which is often powered by coal. But the paper industry is one of the most energy-intensive, it produces a lot of pollution, and disposal is a big problem. Todd Larsen, managing director of Green America, insists that computer communication is the lesser of two evils, environmentally speaking.

A lot of paper waste is advertising. Claire Sykes points out that in 2007, bulk mail represented 60% of all mail, comprising 100 billion pieces made from more than 100 million trees. Some companies are moving to email messages instead, but then we get the problem of spam. Isn't there some way that businesses can get their message across to likely customers without this suffocating lava flow of advertising to all and sundry?

Now we need to clarify several meanings of the term 'radical transparency.' It can describe a management approach in which decision making is carried out publicly (with a few exceptions for data related to personal privacy and security). The term also describes transparency and accountability in the operations of government or corporations. For instance, the C-SPAN channel gives U.S. viewers the opportunity to watch Congress in session. Government transparency might include the recent decision of Britain's National Health Service to measure and publish the quality of care demonstrated in each department of each British hospital, in order to give patients more informed choices. Such transparency is lacking in American hospitals, according to Marty Makary, MD, and if it were instituted could drive out unnecessary and dangerous medical care. This could save something like 20% of the total cost of medical care, not to mention much pain and suffering.

Another type of transparency was proposed in the Congo Conflict Minerals Act of 2009 (S891) which would "require annual disclosure to the Securities Exchange Commission of activities involving columbite-tantalite, cassiterite, and wolframite from the Democratic Republic of Congo." The bill aims to advise companies to avoid the use of 'conflict minerals' in their electronic products, in order to cut funding to illegal armed groups carrying on war, rape,

and murder in the Congo. While the bill died in committee, similar language passed as part of the Dodd-Frank Wall Street Reform bill in 2010.

But here what we mean by radical transparency is the wide dissemination of knowledge about life cycle assessment and health effects of consumer products. Otherwise I will refer to 'government transparency,' 'corporate transparency,' or 'privacy issues.'

Other Obstacles: The biggest obstacle to sustainable practices is the idea that the economy, our standard of living, and people's jobs all depend on everything growing bigger all the time. We always need more, more, more. According to this mindset, we must 'develop' everything, land and resources, using up the commons as quickly as possible—let tomorrow take care of itself. The inherent fallacy should be obvious, yet commonly disregarded. A friend's mother, a very successful Chicago realtor, could not see wilderness as anything but "wasteland."

On the local scene, sustainable practices may run up against zoning regulations, building codes, or the rules of neighborhood housing associations. These may have been formulated decades before current environmental concerns and 'green' building techniques. Local leaders may find it more important to maintain the class status of a neighborhood (large houses and lots) or their idea of aesthetics (a closely-clipped lawn and no clothesline in the backyard) than to build for future generations. Sometimes the problem is just resistance to change.

Chapter 13
The Commons

The land must not be sold permanently, because the land is mine and you are but aliens and my tenants.

~Leviticus 25:23

Suppose you were a poverty-stricken child wandering the streets and begging for your bread, completely unaware that you are the heir to a rich fortune. That may sound like the plot of a Dickens novel, but in a metaphorical sense it applies to those of us who have forgotten that we are the heirs—and also the guardians—of the world's commons. It is the air we breathe and the sunshine that bathes us, the Ocean and all the world's resources. It is the web of life and it is accumulated human knowledge. But we have taken all this treasure for granted. As American philosopher William James once said, "It is hard to focus our attention on the nameless."

Over the years as our commons has been enclosed for corporate gain, most of us have not noticed this silent theft because we didn't have the language for it, says Jonathan Rowe. The only language was that of the economic culture. Rowe says "The takers are called, collectively, the 'market.' The process is called, collectively 'growth.' What exactly is taken? There has not been a word. The assumption is that the market—the realm of money—expands into a void."

Economic globalization as directed by neo-liberalism involves moving into every part of the planet from the Arctic to Antarctica—with an eye on the asteroids as well—and putting up for sale everything that can possibly be turned into a commodity. The planet, its envelope or biosphere, and the heavens as well, all of which once belonged to Humanity as a whole, are now divided up into parts and belong to the first entrepreneur who appears on the scene. An indigenous group may live in a place and use the land's bounties, but their ownership is not recognized unless it fits into the western framework of legal titles.

Now various corporate entities hold title even to electromagnetic frequencies and life-forms. Even the 'funny papers' have taken note of this increasing *commodification*: the characters in "Mother Goose & Grimm" find that corporations own not only the "Happy Birthday" song but also the exclamation "Gesundheit!"

The market narrative held sway for decades but eventually the takers became too bold and aroused effective opposition. Across the world, for instance, municipal water systems are being bought up by multinational corporations. The number of people whose water services came from private companies grew from 50 million in 1990 to 300 million in 2002—an increase of 600% . In California, residents identified a water crisis in which about nine million mostly low-income people depended on water suppliers that were repeatedly cited for violating state drinking water standards. In 2009 both houses of the California Legislature passed the Human Right to Water Act finally signed by Gov. Brown in October 2011. This law set a precedent for the nation and also supports efforts to establish water as a human right at the United Nations. +++

Because modern enclosure was pursued so blatantly under the recent Bush administration, the taking of the commons finally has a name. Rowe says "The naked greed and the brazen sense of entitlement have caused people to take notice. More, they have given shape to that which is being taken." Once people identify the process of commodification and enclosure, they can reclaim the commons. And people do take care of their commons. Biologist Garrett Hardin's famous essay "The Tragedy of the Commons" has long been misappropriated by those who say Hardin shows that owners of a commons inevitably destroy it. But it is colonizers and private

corporations that undermine local sustainability, not the people who live there for generations and have worked out ways to share it and preserve it.

The 2009 Nobel Prize in economics was awarded to Elinor Ostrom, the first woman to earn it, for her work showing that common resources such as forests and fisheries can be managed successfully by their users rather than by governments or private companies. Ostrom said: "What we have ignored is what citizens can do and the importance of real involvement of the people involved—versus just having somebody in Washington…make a rule."

Michael M'Gonigle, at the University of Victoria, describes a new way people preserve the commons. The community ecosystem trust is a legal instrument in which those with a claim to land can ensure that whoever uses and manages the land will do so sustainably. For instance, M'Gonigle says thousands of "forest user groups" in Nepal collectively manage their economic activities in a way to sustain the forest as well as their communities. These groups are federating in order to gain greater support from the government. M'Gonigle and other members of the International Network of Forests and Communities are using the Nepalese and similar experiments on other continents as models for British Columbia, where a number of groups composed of First Nations, fishers, loggers, environmentalists, and others are seeking to negotiate with their government to achieve greater autonomy over local ecosystems. +++

Gift Economy: To help preserve the commons we might make use of a new paradigm which is, in fact, an old paradigm, the Gift Economy. This is a society in which people regularly exchange valuable goods and services without an explicit agreement of reciprocity. David Bollier makes a distinction between a market economy and a gift economy in that the market economy assigns value to things we can measure. But it is harder to put a value on things that are intangibles, not traded in the market. In fact, many societies prohibit turning gifts into goods for trade. The gift must be consumed or passed on.

Mark B. Jacobs says any transaction in a gift economy has three traits: there is an element of altruism beyond calculations of self-interest; the transaction contains an element of 'free play' that changes the way both giver and recipient measure its value; and ideally, at least, the transaction is only part of a continuing process of gifting and re-giftings. Jacobs says the gift economy expresses an optimistic, generous and trusting outlook. It forces us to re-think how we estimate value and "reminds us of the interconnection of our lives to other human lives, to non-human lives, and to the non-living world."

Because we are so immersed in the market culture, the gift economy may be easier to understand from examples. In many hunter-gatherer societies, food is shared, making sure that no one goes hungry because of poor foraging that day. Native Americans in the Pacific Northwest practiced the potlatch, a feast where leaders gave away their accumulated goods to followers, thereby gaining honor and strengthening group bonds. Theravada Buddhists in Southeast Asia have 'Feasts of Merit' similar to the potlatches. Before encountering Westerners in the 19th century, Pacific Island societies were basically gift economies. The five—later six—Native American tribes who had banded together in the Iroquois Confederacy before Europeans arrived had an economic system that featured communal land ownership, cooperative hunting and fishing, and trade that commonly involved present-giving.

Rural barn-raisings are a form of gift-giving. Jacobs says that charitable donations of time or resources (without expectation of tax or other benefits) are gift economy transactions. So is what he calls 'cooperativism' where individuals create valuable things and make them freely available to others, such as wikis, youtube, and citizen journalism. Freecycle is an example of re-giving networks. Bollier notes "The organizing principle of scientific research has been gift-giving

relationships with other members of the scholarly community." Wikipedia and the free software community are yet other examples of an information gift economy.

Friendship and family are like small gift economies, and Frieda Warren points out the origin of the gift economy in mothering, the original expression of unilateral giving.

The Earth as Commons

Who publishes the sheet-music of the winds or the music of water written in river-lines?
~John Muir, American naturalist and conservationist, 1838-1914

Planetary life is both our common natural heritage and our common responsibility to protect. Only twelve countries hold 70% of the Earth's species: Australia, Brazil, China, Colombia, Democratic Republic of Congo, Ecuador, India, Indonesia, Madagascar, Mexico, and Peru. Tropical rainforests are believed to contain 50 to 90% of all species, and researchers Mike Shanahan and Eshan Masood note that one-tenth of all world plant species live in the Hindu Kush-Himalayan belt. The poorest countries are often richest in biological diversity but they may need financial and technical help to preserve natural ecosystems when their people want firewood, bushmeat, more farmland, or protection from wild animals. Also various species must be defended against criminal poachers.

Certain areas of the world with a rich biodiversity that is seriously threatened are called 'biodiversity hotspots.' Researchers Shanahan and Masood say that 25 such hotspots covering only 1.4 percent of the Earth's land area, contain 44% of all plant species and 35% of all land vertebrate species. Not only scientists and governments but all of us would do well to learn about these places and plan how to protect them. The biggest threats to biodiversity are conversion of land to farming, deforestation and other habitat destruction, unsustainable harvesting or hunting, and deliberate or accidental introduction of alien species.

From another perspective, the Earth belongs to everyone, and every human being is entitled to an equal share of its fruits. This is not a new idea. In the 16th century, Spanish scholar Juan Luis Vives said concerning the resources of nature: "All these things God created, He put them in our large home, the world, without surrounding them with walls and gates, so that they would be common to all his children." In 1796 Thomas Paine wrote:

It is a position not to be controverted, that the earth, in its natural, uncultivated state was, and ever would have continued to be, the common property of the human race….It is the value of the improvement, only, and not the earth itself, that is in individual property. Every proprietor, therefore, of cultivated lands, owes to the community a ground-rent…for the land which he holds.

The Universal Declaration of Human Rights, acknowledged by the member nations of the UN, declares that all humans have the right to life and to an adequate standard of living. Yet despite our wealth and technological know-how, almost a fourth of the human race lives in extreme poverty. In the past three decades, a number of academics and activists have been exploring the idea of a universal basic income for everyone on earth, calling it Global Basic Income (GBI) or Universal Basic Income (UBI). Besides eradicating poverty and hunger, such a plan would have the effect of ending overexploitation of resources and reducing pollution levels. Let us consider this at greater length in the chapter about economics.

Chapter 14
Green Higher Education

The object of the educational system, taken as a whole, is not to produce hands for industry or to teach the young how to make a living. It is to produce responsible citizens.
~Robert Maynard Hutchins, "The University of Utopia"

For many, the purpose of a college education is all about gaining an advantage in the job market. A college degree certifies that one is solidly middle class. For some individuals college is about making social contacts useful later on, or even about finding a spouse. For society, universities are supposed to increase our national competitiveness in science-and-technology. But Maynard Hutchins, Chancellor of the University of Chicago in the late 1940s, was already criticizing this approach. It was true then and now that many people gain lifelong personal benefits from their years at university other than status and career advantages. And universities can benefit society in ways other than to advance technology.

In fact technology is far out of balance with the understandings that could help us use technology better. These would include history, psychology, anthropology, biology, and philosophy.

Philosopher Brand Blanshard says the purpose of a college education is "to produce reasonable minds [by which] I mean one which, in the varied situations of life, adapts its beliefs, attitudes, and actions to the facts of the case." Reasonableness is a very good and necessary first step. But faced with a number of crises, we need something even more from this expensive investment into the next generation.

Ecological Literacy

The only book that should be read is the book of nature.
~Voltaire, French philosopher, 1694-1778

Fritjof Capra, physicist and futurist, lists two steps to create sustainable communities. First is *ecoliteracy*, learning the basic principles of ecology. Second is *ecodesign*, applying ecological knowledge to redesign our technologies and social institutions. Ecodesign requires a shift in focus from looking for what we can extract from nature, to what we can learn from nature. This in turn will require redesigning many of our social institutions, and recognition that unlimited economic growth can only lead to destruction of the planet's support system.

We would expect higher education to prepare people for life on Earth. But, says David Orr, professor of environmental studies at Oberlin, four years in college do not necessarily make graduates better planetary citizens. Oberlin the university and the town are combining forces to to become a model of integrated sustainability, and expect to become carbon neutral by 2025.

Orr proposes that colleges set a goal of ecological literacy for all students, as they now set such goals for basic proficiency in other areas such as English and mathematics. This eco-literacy would include:

The laws of thermodynamics
        Basic principles of ecology
                Carrying capacity
                        Energetics: a branch of mechanics that deals with energy and its transformations. The term also describes the total energy relations and transformations of a particular system, such as an ecological community
                        Least-cost, end-use analysis
                        How to live well in a place
                        Limits of technology
                                Appropriate scale
                                        Sustainable agriculture and forestry
                                        Steady-state economics
                                                Environmental ethics

Several hundred U.S. colleges and universities have environmental science or environmental studies programs, many of which offer advanced degrees. These, of course, are specialized fields with courses that are not required of all students. Some environmental science programs focus more on vocational training for occupations in public sanitation or forestry than on sustainability or other broad issues, but the field as a whole is growing and broadening. One prototypical program with which I am familiar is Western Washington State University, where one of my grandsons graduated from the school of sustainable design.

These broader environmental studies programs are sparser in the South despite its many natural areas of unique beauty and ecological significance such as the Everglades, Ozarks, Appalachians, and Gulf Coast. The South also uses more fossil fuels per capita than other parts of the country, with more electricity for air conditioning and more driving because it is largely rural. However, the Georgia Institute of Technology expects students to take at least one class related to sustainability, with 260 courses to choose from, and Appalachian State University has the nation's longest-running program about appropriate technology (since 1984).

The North American Alliance for Green Education (NAAGE) is a non-profit consortium founded by students, including both colleges and organizations committed to environmental studies. One NAAGE program is the 'Living Routes' study abroad program allowing students to earn college credit from the University of Massachusetts while they visit ecovillages around the world, as "a learning community within a living community."

Green Campuses: Without waiting for a transformation of academic offerings, students in American colleges have become activists around the issue of climate change. Over 5,000 college students from across the United States went to a gathering called PowerShift 2007 held at the University of Maryland, attending workshops and rallies to prepare them to fight climate change. According to Brianna Cayo Cotter of the Energy Action Coalition that organized PowerShift:

> Climate change is our generation's civil rights movement. We're at a crucial moment in history. Climate change is an issue that's already impacting us, from the destruction of the Appalachian Mountains to the wildfires in California. We get that the resource wars and super storms are connected. And we get that the steps taken today will end up being the future for tomorrow.

With student involvement, Carleton College in Minnesota financed a wind turbine and is planning two more to supply its electricity, while nearby colleges St. Olaf and Gustavus Adolphus plan to follow suit. Students across the USA and other countries are leading their

institutions to become greener in terms of energy-use, reuse and recycling, and using locally grown food in the cafeteria.

Another area is green building. In a recent year (2006) college construction cost $15 billion. Were those all energy-efficient buildings? When one considers that at any given time about 16 million students are attending colleges, universities, and junior colleges in the United States, their potential for positive change is enormous.

Sustainable Students

We are the diploma retailers who have allowed students to assume that the machines and the ungraduated will supply all their real needs. We have let these students major in Getting Ahead.
~Jason Peters, "Destined for Failure," *Orion*, 2008

One important area that needs more sustainability is the lives of students themselves. An AP-mtvU poll in April 2009 found the vast majority of college students were currently feeling stressed, with a significant number at risk for at least mild depression. Those with a parent who had lost a job during the school year showed more than twice the percentage of depression. No mention was made in this report of students who worried about their own part-time or full-time job, or the years ahead of them paying off loans. (Student loan debt is now more than $1 trillion.)

The average combined tuition, board and room at U.S. public colleges is now about $10,000 and at private colleges about $30,000. As tuition and other college costs keep rising, students are increasingly likely to work while in college, and increasingly likely to work full-time. According to a study by Jonathan M. Orszag and others, 57% of college students held part-time or full-time jobs in 2001 and the number was rising. In 2000, 828,000 full-time college students worked full-time. That is almost a million students who one fears can barely enjoy the traditional college experience or keep up with studies while meeting such high demands on their time and energy. Even without financial worries, higher education can be stressful, especially for graduate students. Social anxiety, fierce academic competition, and institutional indifference are the norm.

Americans may feel that their children need a college degree in order to ensure their working future, a goal for which many parents and the students themselves must sacrifice. But if not college, is there ever a time in one's life to be free to pursue one's interests and talents? And what if those interests and talents have been subordinated to 'getting ahead' since elementary school? There is a limit to how much one can learn in a perpetual pressure cooker. Let us reevaluate our whole system of higher education. Poorer countries than the USA manage to educate their youth without putting them in hock for most of their working lives. Let there be alternatives to the college degree as the only certification of vocational and cultural competence. We could start with Human Resources Departments: they could rate job applicants as individuals instead of depending on certification from third parties. +++

American colleges and universities also need some changes. Winberg Chai, Professor Emeritus at the University of Wyoming suggests several reforms. "The proliferation of overpaid administrators" could be addressed by term limits of five years before they return to teaching. Prof. Chai also proposes that administrators receive a maximum of 25% higher salaries than faculty members, which he says was the case 30 years ago. And let institutions of higher learning get out of sports as big business. +++

Academic Barriers to Eco-Literacy

Too many of the guests and tenants in academia bear a striking resemblance to that clueless freeloader at the end of The Great Gatsby *who shows up one night after Gatsby's death, unaware that the party is over.*

~Jason Peters, *Orion*

In general, universities have been slow to concern themselves with our environmental crisis. Even higher education is part of our constellation of broken systems. Many universities seem more interested in research grants from government and industry then in students, and are more involved with semi-professional athletic teams than with serving the species. In the case of U.S. state universities, one reason for foot-dragging on the environment may be that they usually have several schools and departments more vocational in aim such as business school, school of agriculture, nuclear engineering, forestry, and so on. A concern with environmental issues might be perceived to interfere with the vocational aspects of some of these programs, or the lucrative grants for industry-related research. But even in the liberal arts and sciences, conditions that threaten our species' survival seem to be very much side-issues.

Many academics are what could be called intellectual technicians. While very knowledgeable about their particular field of expertise, they may not be any more curious or insightful in general areas than are people without a PhD. The same is true of professionals such as doctors and lawyers, who can be as ecologically illiterate as any high school graduate. College teacher Jason Peters notes that "People with five or seven letters after their names are clinging to the delusion that energy and technology are interchangeable [but] many of us with impeccable academic credentials will be among the first to starve." Peters thinks it should be a college graduation requirement to pass an interdisciplinary course about oil. Peters also says that every campus needs large, very visible vegetable gardens tended by virtually everyone, and new buildings running on energy sources that will still be available 100 years from now.

In most academic courses, nature is simply ignored. Two Australian scholars, David McKie and Tom Jagtenberg, explore how academic traditions and political considerations contribute to this silence about our shared plight. One barrier is the traditional division into academic disciplines—specializations that go back several thousand years to the Greek academy. These divisions tend to exclude and marginalize environmental interests. Nature is divided up among many disciplines such as biology, history, geography, philosophy, literature, anthropology, and others. Instead, ecological concerns need to become interdisciplinary.

They warn that any hopes of greening the university must take into account the conservatism of institutional processes and the time it takes to create new ways of thinking. Another obstacle is politics and turf battles within and between university departments, along with competition for funding. These processes "remain hierarchical, male dominated, and respectful of tradition—just like the processes of the major political parties and government bureaucracies." As anyone with experience of academic politics can testify, the university is hardly an 'ivory tower.'

The Australian professors discuss several areas of the university that especially need reformulation in order to turn green. The first is neoclassical economics, whose 19th century paradigms ignore sustainability. Neoclassical economic theory assumes that the economy is a separate realm of society that can be understood in isolation. Classical economists put land and environment into the category of *externalities*, something outside of the economic system. This arbitrary exclusion then leads to what the authors call "obsessive and sometimes clearly

unreasonable calculations whereby car crashes add value to GDP, whereas the depletion of finite resources does not count at all." The narrow rationality of neoclassical economics leaves out unpaid (mostly women's) work in caring for children, the ill, and elderly relatives and other essential work at home, and other parts of the informal economy. However, the new field of green economics includes what was previously left out.

Two other basic assumptions of neoclassical economics are that individuals always act rationally in the economy, and that economics can be as objective and predictive as physics. Yet if individuals always acted rationally in the economy there would be no place for the multi-billion dollar field of advertising to persuade them through their instincts and emotions, or for marketing research into whether customers prefer blue detergent to purple detergent. And if economics were like physics there wouldn't be periodic stock market crashes or 'corrections.' The notion that economics rivals physical science spread in the U.S. media from the 1980s until the 2008 financial collapse, becoming "the controlling imagery," as if it constituted the natural order. The Australian professors quote Fred Block that in America "public debate has come to hinge, not on what kind of society we are or want to be, but on what the needs of the economy are." They add that economic systems which deny their dependency on ecosystems will face great difficulties in adjusting to rapid climate change.

In an interview soon after the 2008 economic collapse, Deborah Solomon asked well-known economist James K. Galbraith how many of the nation's 15,000 or so professional economists had seen the collapse coming. Galbraith said only 10 or 12 had such foresight. He added that most economists teach college "and most of them teach a theoretical framework that has been shown to be fundamentally useless."

Neoclassical economics has been under attack from several directions and is starting to change. For 200 years, economists preferred theory to experimentation. That started to change in the 1970s with the field of behavioral economics, which adopted empirical methods like those used in other social sciences, including experiments based on game theory. Future-thinking economists are now formulating a 'Post-Economics' that positions the economy not as a separate, self-regulating realm but as an interactive part of environmental and social systems. Instead of taking its models from classical physics, the new economics takes diverse models from biology, climatology, and advanced mathematics. Rather than assume a Rational Economic Man who acts in a linear world that tends toward equilibrium through market forces, Post-Economics posits a nonlinear world where uncertainty and changing patterns are the norm.

The study of economics as taught in U.S. schools and elsewhere is really indoctrination in one theoretical system. In 2000, a number of French economics students rebelled against their courses, declaring that the neoclassical dogma they were taught was "autistic" or, narrowly focused and disconnected from the outside world. Hundreds of students signed a petition demanding teaching reforms, away from complex mathematical models that have no relevance to reality, and toward multiple theoretical approaches. This Post-Autistic Economics movement (PAE) gained support from some leading French economists, spreading to Cambridge and Oxford University in the UK, then Harvard in the United States, to Madrid, and elsewhere.

Steve Keen, professor of economics at Western Sydney University, Australia, led such a student protest a generation earlier (1973) and says it is crucial that the 2009 crisis "galvanizes student protest against the lack of debate within academic economics." Keen says that business groups need to recognize that their true friends in the academic world are those who actually understand the market system, based on realities. Robert Costanza, a pioneer of ecological economics and director of the Gund Institute for Ecological Economics, agrees, saying "the

discipline persists because it's a huge investment trap [similar to the sunk costs fallacy]." Another economics professor, Geoffrey M. Hodgson, proposes an organized world protest of academic, student, and business economists who are calling for change.

Keen says the field of economics needs to learn from the great advances made in science over the last 40 years, concepts which it has ignored to its detriment. Most of all, the textbooks need to change. Keen predicts that without strong pressure from students and community, economics textbooks will continue to teach the old models.

The magazine *Adbusters* offers a diagnostic tool for rating an economics text, with questions such as "Does it focus on perfectly competitive markets? Make no distinction between needs versus wants? Suggest markets are democratic, because each person votes with their money in the marketplace?" A 'Toxics Textbook' group is currently growing on Facebook.

There are actually many ways for the proverbial blind men to look at the economics elephant. Classical economics focuses on capital, Karl Marx on labor, Henry George on land, Social Credit on the consumer, and ecological economists on the planetary processes that underlie all economic activity. Keen names several important thinkers "conspicuously absent from modern economics courses" such as Thorstein Veblen, John Maynard Keynes, and Joseph Schumpeter. Others are Herman Daly and E.F. Schumacher.

Still another obstacle to greening (in UK and Australian universities) is the Leftist orthodoxy of many social science and humanities academics. Jagtenberg and McKie say that by focusing only on the labor movement and class conflict, the academic Left marginalized environmental issues and refused to make the distinction between spirituality and religion—as in the spiritual orientation to the land of most pre-modern peoples—which Greens find basic. Meanwhile, the women's movement, green movement, peace movement, and indigenous people's movement have gone beyond the left/right paradigms. The Australian professors say that conventional academic thinkers tend to ignore pre-modern cultures, and they scorn the "more pagan and tribalized postmodernism" of '60s counterculture whose early traditions were ahead of their time in pioneering self-sufficiency and living in balance with nature.

'Old Left' orthodoxy is not so noticeable in U.S. universities (despite complaints of U.S. conservatives), but a broader rationalist/materialist bias across the political spectrum has similar effect. Economist Herman Daly says this scientific materialism tends to disregard the natural world as "just a pile of instrumental accidental stuff to be used up in the arbitrary projects of one purposeless species." Based on a reductionist version of science, it assumes that all human knowledge can be reduced to physics and chemistry.

Swedish philosopher Mikael Stenmark describes several varieties of this scientism. Some versions insist that "we are rationally entitled to believe only what can be scientifically proved or what is scientifically knowable" or that "the only reality that exists is the one science has access to." Stenmark says these scientific reductionists tend to dismiss everything that cannot be dealt with by science, denying that such problems are in fact genuine or significant. Other versions of scientism state that science is the most valuable or the only truly valuable realm of human life and that it will eventually solve all of our genuine problems.

Other claims according to Stenmark are that "science can completely explain morality and replace traditional ethics" and is "sufficient for dealing with our existential questions or for creating a world view by which we could live"—in other words, science can entirely supplant metaphysics, religion, and ethical systems. Stenmark calls this version of scientific materialism "redemptive scientism," illustrated with a quote from noted biologist Richard Dawkins:

We are machines built by DNA whose purpose is to make more copies of the same DNA…That is

EXACTLY what we are for. We are machines for propagating DNA, and the propagation of DNA is a self-sustaining process. It is every living object's sole reason for living.

Brian J. Ford is one biologist who disagrees with Dawkins, noting that "We are in an era dominated by computers, artificial intelligence, molecular biology, and microelectronics. These are all mathematical, precise, reductionist disciplines. [For example] the 'selfish gene' is a crude cybernetic concept, born of the common culture of microelectronics and computer control." Ford says scientific anthropocentrism views humans as a world apart from other species, and it underestimates the cognition and feelings of other species, orthodox assumptions that are contradicted by Ford's knowledge of animals from a lifetime of studying them.

Temple Grandin complains that her field of animal research is becoming increasingly "abstractified." Instead of studying real animals in their natural habitats, it's about mathematical modeling. She says good fieldwork is essential in observational sciences such as epidemiology or animal behavior. "Some people think if you don't have a control group it's not science. But there's a lot of science where there's no way to create a control group [and] you have to start with observation before you can create a lab experiment or do a statistical analysis." She adds that some of the best science combines bench science (lab work) with painstaking fieldwork.

One concern is dominance of molecular biology over natural sciences such as invertebrate zoology, ornithology, and herpetology. The laboratory, with its potential for profitable patents, is crowding out the field work. Paul Dayton, at Scripps Institution of Oceanography, says universities are banishing the natural sciences. Their new project is to "get the 'ologies' back in the nineteenth century where they belong." Undergraduates majoring in biology at many universities do not get *any* courses in classic botany or zoology. Dayton and fellow scientist Enric Sala say some college students learn ecology from textbooks based on molecular biology and theoretical population biology. "Worse," they say, "there are ecologists who have never seen the communities or populations they model or speculate about, and who could not identify the species composing these communities." Yet interacting with nature is what originally drew most biologists into their field. The public, especially young people interested in biology careers, should be aware of this 'anti-ology' trend and try to reverse it. In the face of mass extinctions and ecosystem failures, we need natural scientists and field ecologists more than ever.

Wanted: A New Philosophy

We don't experience reality itself, but an interpretation of it, produced by our brains, which it adapts to be more-or-less consistent with our existing paradigms, thereby being strongly influenced by our dependencies and vested interests, and quite capable, in the process, of blinding us to the glaringly obvious.
~Roger Hicks, post in *The Guardian*

Another academic subject field tending to ignore the crisis of our species is philosophy. This was once the field of study that attempted to integrate all the others. While philosophy is not a topic we often hear about on the evening news, it has had an enormous effect on historical events. However, according to a paper by Kevin Mulligan and others, Western philosophy today has three main parts all of which "are in a bad way." The three divisions are Analytic Philosophy (AP), Continental Philosophy (CP), and History of Philosophy (HP). Analytic Philosophy developed from the work of English philosophers Bertrand Russell and G. E. Moore a century ago, and is today the dominant school of philosophy in the English-speaking world.

Philosopher Christopher Ott says the fundamental assumption of AP is that philosophical problems are basically linguistic confusions that will eventually be solved. However, notes Ott, "philosophy is still plagued with unsolved problems one hundred years later." He notes that deductive logic tests only consistency and cannot tell us anything not already assumed in the premises, so logic and syntax are unable to determine truth by themselves.

Another problem of AP, say Mulligan and colleagues, is that its practitioners do not believe that philosophy can add to the stock of positive human knowledge. They do not see philosophy as directly relevant to scientific concerns in the wider world. Instead of dealing with real world problems, these philosophers "occupy themselves with in-house puzzles." This aversion to the real world suggests that AP as it stands will be of little help in our thinking toward survival.

The second stream of contemporary Western philosophy is Continental Philosophy, a broad range of views dominant in Europe and gaining ground in North America. Continental philosophy has problems too, such as a lack of interest in philosophy as a theoretical enterprise. Mulligan says CP's interest in the real world is only an interest in the social and political world, not the physical or biological world. But a philosophy that leaves nature and science out of its metaphysics has left out far too much. American liberal arts students and grads are probably most familiar with CP in the form of postmodernism, structuralism or poststructuralism (Claude Levi-Strauss, Michel Foucault), and the critical theory of deconstruction associated with Jacques Derrida. These philosophical ideas arose in the revolutionary 1960s in response to increasing globalization, and are applied to architecture, literature, and the social sciences. Theorist Jean Francis Lyotard described this as disbelief in the 'metanarratives' or ideological myths of society. Another definition of postmodernism (which is notoriously difficult to define) is by Josh McDowell and Bob Hostetler:

> A worldview characterized by the belief that truth doesn't exist in any objective sense but is created rather than discovered. [It is] created by the specific culture and exists only in that culture. Therefore, any system or statement that tries to communicate truth is a power play, an effort to dominate other cultures.

The difficulties inherent in an anti-theoretical philosophy have led to many philosophical disagreements, especially among postmodernists themselves. Along with popular criticism and parody, there is confusion for college students who may end up with the idea that nothing can be known, every interpretation is false, and all truth is culturally relative. Such notions promote a passivity that does not lend itself to helping humanity survive and thrive. Philosopher Michael Zimmerman says that for fear of making new culturally-bound totalizing statements, many academics find it hard to say anything positive about the future or what they want it to look like. Another problem for both AP and CP schools is that their most influential philosophers belong to the past and have no obvious successors.

The third stream of philosophy is the History of Philosophy. Mulligan et al say that in Europe there is now almost total identification of philosophy with the history of philosophy. Further, HP has almost everywhere collapsed into the history of nationalist or regionalist philosophers instead of studying "the best of what has been thought, said and argued." Thus none of the schools study philosophy as a whole because that would require "a view of philosophy as a theoretical enterprise that can lead to positive knowledge"—a view which they do not have.

A philosophy graduate, Jordan Romanus, writes in *Adbusters* about his disillusionment:

My grades are determined by how well I can regurgitate uninspiring thoughts….One of our main subjects was Descartes' *Meditations on First Philosophy*. We found several flaws in Descartes' arguments but instead of constructing our arguments against his conclusions, we were forced to merely summarize them….Philosophers used to be the backbone of change. Now they simply summarize and overanalyze all the irrelevant aspects of life.

Western philosophy does seem to be in a slump. Zimmerman says that since World War II, "Philosophy has made itself socially useless….They just took themselves out of the ball game." Mulligan and colleagues ask for a rekindling of the "honest, pioneering spirit" in which analytic philosophy and the forerunners of continental philosophy began a century ago, when there was no gulf between them. These academic philosophers present a vision for a revitalized philosophy. But here I would suggest something else, explained by Christopher Jonathan Ott in *The Evolution of Perception and the Cosmology of Substance: a simpler theory of everything*.

While I am no philosophy scholar, Ott's proposal seems to cut through many of the difficulties that have plagued philosophy for a long time. It may also steer us to a clearer and healthier attitude towards the world of our experience. He says he has been especially influenced by modern research in perception, Gestalt psychology, and process philosophy.

Ott begins by pointing out that the current materialist underpinning of science will no longer serve to explain what we know. He says "Science is now like a one hundred story building built upon a foundation designed for four….It is said that materialism is the best theory that we have because it has the greatest explanatory power [but] its explanatory power is more limited than most of us assume." For instance, "The materialist has no simple coherent explanation for gravity" or for the constant speed of light, or other aspects of space and time. Science needs a new foundation beyond materialism.

There are also intractable problems in philosophy, often because a philosopher finds that some basic concept that everybody takes for granted cannot actually be understood on its own. Ott says that ever since the Greeks, humans have invented so many theoretical entities to explain experience that they "began to question experience itself, since it no longer seemed compatible with [their] theories….The world was finally totally upside down." So both science and philosophy are limited by an outmoded metaphysics, their system for understanding experience.

Ott's solution is to reconstruct our conceptual model of reality. He offers a complete paradigm shift after which, he claims, the world of our experience will once more be the actual world. His basic axiom is that perception is fundamental. "Perceptual schemata can account for every single attribute of our experience, from the mathematical to the physical, to thought, language, identify, and culture. No other [theoretical] entities are required." This new theory, the evolution of perception, cannot be tested, proved, or disproved. However, says Ott, neither can materialism be proved or disproved—but his theory is much simpler and more "metaphysically efficient." He adds:

> The evolution of perception is not only a rationally viable theory worthy of selection by the criteria of science, but it is a theory which holds out the promise of bearing the kind of ethical and spiritual fruits that materialism has failed to manifest. Rather than divided material entities in meaningless competition for material things, we see ourselves as fundamentally one and the ethical creators of our world.

New thinking requires a new philosophy to support it and the evolution of perception is a good candidate. Another new perspective on philosophy is offered by David Ray Griffin, a

theology professor who founded The Center for a Post Modern World in Santa Barbara. Griffin describes the 17th century battle of worldviews previously outlined in *Models, Myths and Muddles*, that ended with the victory of the mechanists over the Hermeticists aided by the Catholic Church. Griffin says the main issue was whether action at a distance was possible outside of a miracle. Robert Fludd, advocate for the Hermeticists, said such action was possible and not miraculous, but his view threatened the church's authority to pronounce miracles and so they supported the mechanists. Of course, the church did not foresee that later developments of science would not only discover action at a distance such as electromagnetic radiation, but would also drop religion entirely from its cosmology.

Griffin notes that modern cosmology was based on a limited set of data that excluded most of a vast variety of human experience from many cultures and over thousands of years, making it narrow-minded and incomplete. Griffin's proposed new worldview, 'constructive post-modernism,' draws on the work of philosopher Alfred North Whitehead, an early 20th century process philosopher who did not fit into the main schools of philosophy listed above, which are based on a materialistic view. *The Stanford Encyclopedia of Philosophy* notes that "from the time of Aristotle, Western metaphysics has had a marked bias in favor of things or substances." But Whitehead and followers added change as one of the main categories of metaphysical understanding and proposed that 'things' are actually composed of processes. This is similar to the views of modern physicists. Richard Conn Henry, Physics professor at John Hopkins, puts it succinctly: "To see the Universe as it really is, we must abandon our tendency to conceptualize observations as *things*."

Philosophy professor Nicholas Gier says that in ancient times, Heraclitus, Lao-tzu, and the Buddha were the great "process" philosophers. Heraclitus famously said, "One cannot step twice into the same river." Gier adds that the common ground in modern process philosophy is the meeting of contemporary physics and Asian philosophy. We can't present all the steps in Griffin's new 'Whiteheadian' worldview here, but by taking our focus off *thing*s it could help explain more of our experience.

A third new philosophical approach is the Integral Theory of Ken Wilber and others, an interdisciplinary work in progress. Integral Theory attempts to be an all-inclusive framework drawing on key insights of the great knowledge traditions of the world whether they are scientific, spiritual, or philosophical. Some academics have heralded this work but as yet it has not received wide acceptance.

Chapter 15
Sustainable Cities

It is in cities that the battle to tackle climate change will be won or lost.
~London Mayor Ken Livingstone

Our species is going through a profound transition because the majority of us now live in urban areas—half the world's population concentrated on two percent of the Earth's land surface. Most of the population growth in the next 30 years will end up in cities. Humans are becoming urban dwellers, *Homo urbanus*. By 2015, only three years from this writing, Tokyo, Mumbai (Bombay), and Delhi will each have somewhere between 20 and 37 million residents. By 2050, experts predict that about 70% of the world's people will live in an urban setting, with the largest megacities in Asia and Africa.

Cities today account for the great majority of emissions that cause climate change, an estimated 80% of total greenhouse gases. With mounting scientific evidence that global warming is not only quite real but advancing more quickly than anticipated, along with concerns about the future availability of oil, the majority of cities and towns are trying to make major changes. City planners in both industrial and developing nations have a monumental task ahead.

In May 2007, leaders from large cities around the globe, Addis Ababa to Sao Paolo, held an environmental summit. They declared that mayors would fill the void left by foot-dragging governments. For instance in the United States, where positive leadership at the national level was lacking, cities, states, individuals, and citizens' groups had begun to pursue their own strategies to save energy and prevent greenhouse emissions. The nation's three largest cities, New York, Los Angeles, and Chicago, had implemented green guidelines. At the 2006 Conference of Mayors, Seattle Mayor Greg Nickels persuaded 319 urban mayors (a number that may have tripled since) to pledge that they would aim at reducing greenhouse gases to Kyoto levels. The "U.S. Mayors Climate Protection Agreement" is a commitment to reduce greenhouse gas emissions seven percent below 1990 levels by the year 2012.

Tools are available. Many of the green-conscious cities join the non-profit International Council on Local Environmental Initiatives (ICLEI), an international clearinghouse for sustainable development. ICLEI provides its members with many services including computer software to identify areas of potential improvement, starting with the "lowest hanging fruit" and then more substantial changes. Toronto's mayor signed up his city for Zerofootprint, a carbon calculator and networking website, to help with his plan to reduce greenhouse gas emissions by six percent in five years and 80% by 2050. +++

Since 2005, towns and cities that have signed the U.S. Mayors Agreement are part of the "Cool Cities" campaign, with three key strategies: Green Vehicle Fleets, Energy Efficiency, and Renewable Energy. In terms of efficiency, for instance, Warwick, Rhode Island replaced its 113 traffic lights and 59 crosswalk signals with LED lights. This change alone reduces carbon emissions by 1,200 tons every year, and after a two-year payback period will save the city tens of thousands of dollars each year. Each city has its own claim to fame. Rock Port, Missouri became first in the United States to operate entirely on wind power. Residents receive electricity from 75 turbines in three counties. The town of Greensburg, Kansas was destroyed by a tornado in 2007 and is now rebuilding as a prototype of sustainability.

The 2006 Conference of Mayors voted for drastic reductions in the use of fossil fuels both for constructing buildings and for heating and cooling them. Leaders agreed that they want the

national building stock to be "carbon neutral" by 2030, which means using no more fossil fuels. In fact, today's buildings account for 48% of all energy consumption in the United States, far ahead of either transportation or industry. New Mexico architect-activist Ed Mazria says "If architects don't attack this, the world doesn't stand a chance." Mayors are listening.

Seattle was the first large U.S. city to require new buildings to meet green design standards (LEED, from the U.S. Green Building Council). Salt Lake City among other governments now requires LEED approval for city buildings or others that get city funding. But some critics say LEED standards are still not energy efficient enough. Neil Peirce, noting that current building codes, zoning, and land-use regulations are seriously out-of-date, says, "A concerted effort by state and local governments to untangle obsolete building codes and set straightforward new standards, and to revamp outmoded zoning with modern and more flexible codes, could give a strong boost to the emerging green revolution." +++

Much of the effort to reduce greenhouse gas emissions in cities has to do with transportation. Cool Cities can buy hybrid vehicles for their own fleets and encourage low gas consumption by local residents and businesses through measures such as free parking for low-emission vehicles. Los Angeles, which once had a thousand miles of streetcar tracks, is proposing to bring back a downtown streetcar loop modeled on one in Portland. Streetcar systems are common in Europe and can be found in Pittsburgh, New Orleans, Seattle, and soon in Washington D.C.

Southwestern cities that have long been dependent on the auto, such as Dallas, Denver, Phoenix, Houston, and Los Angeles, are considering regional rail systems. Local critics say that Seattle, though an environmental leader, is still too car-centric. Erica Barnett says, "The kind of investment Seattle should be making can be found in Denver, which will spend $5 billion over 12 years to build six light-rail and commuter-rail lines with a combined length of 119 miles."

Another area of urban sustainability is electricity production, where Seattle's publicly owned electric utility was the first in the United States to achieve net-zero emissions of greenhouse gases. Meanwhile, 'Second City' Chicago is a leader in energy efficiency and renewable energy as well as abundance of flora. The Chicago Climate Action Plan aims to reduce emissions by 25% below 1990 levels by 2020 and 80% by 2050. Chicago has one of the best renewable energy rebates in the nation. Beatley points out that the city purchases electricity from renewable sources to meet 20% of municipal demand, and is retrofitting 15 million square feet in public buildings for greater energy efficiency. "Few large cities in the world have taken as many steps toward building a renewable-based energy strategy as has Chicago" says Hendrickson.

One form of retrofit is the green roof, such as the one now on Chicago's City Hall. According to Peter Frick Wright in *Sierra*, in summer this roof stays 25 to 80 degrees cooler than nearby roofs. A study by an environmental consulting firm estimated that if 30% of Chicago's roofs were greened, the city could save about $100 million a year. Other famous green roofs are at the University of Illinois, Gap headquarters in San Francisco, and a Ford factory in Dearborn, Michigan. The green roof concept has long been popular in Germany (where the government charges homeowners for polluted runoff) because roof plantings greatly aid in managing storm-water. Stuart Berg, who manages a Philadelphia roof engineering firm, claims that a 1,000-square foot green roof takes only about four hours of maintenance a year—no mowing. +++

Sprawling Los Angeles is another leader of change. Its replacement of 140,000 streetlight fixtures with LED units is the most extensive such municipal retrofit so far in North America. LA's first Latino mayor, Antonio Villaraigosa, vowed to plant one million trees during his term. Voters approved a $500-million bond measure to create habitat and wetlands, and capture storm

water for irrigation and recharge of aquifers. L.A. neighborhoods are taking action to preserve waterways, plant trees, and start community gardens.

New York City's Mayor Bloomberg has announced plans to cut emissions 30% by 2030 and proposes to make Gotham the greenest metropolis in America. \It currently accounts for about two percent of the entire country's CO_2 emissions. About three-fourths of NYC carbon emissions are from buildings. However New Yorkers are way ahead on transportation, since over 80% of them travel to work by public transit, bicycle, or on foot, according to David Owen's *Green Metropolis*. Many don't even own cars. One opportunity for New York City is to use biodiesel from the city's many restaurants to fuel the city's fleets of diesel-powered trucks. Also, the sheer density of the city leads to a lower per-capita use of energy. One idea is to teach energy conservation techniques to the supers of NYC's roughly one million buildings. +++

Within NYC, an organization called Sustainable South Bronx is cleaning up and greening a poor neighborhood now filled with waste-transfer stations, power plants, and truck traffic, and it is creating jobs in the process. A similar organization is Green for All in Oakland, California.

Portland, Oregon was the first U.S. city to have an official, comprehensive plan to reduce CO_2 emissions. In San Francisco, nearly half of residents take public transit, walk, or bike daily. Austin is a 'green' island in the landscape of Texas and is about to become the center of solar manufacturing in the United States. Oakland gets 17% of its electricity from wind, solar, and geothermal sources. DC is painting roofs white.

Across the world, cities are working aggressively to become sustainable, among them Rekyjavik, Barcelona, London, Copenhagen, Sydney, Bangkok, and Malmo in Sweden. In Uganda, the city of Kampala supports urban agriculture and is introducing a comprehensive bus service. Vancouver, the largest city in British Columbia, has developed a 100-year plan for sustainability (7th generation thinking). In Brazil, the city of Curitiba lets a flock of 30 sheep trim the lawns of its municipal parks, public transport carries three-fourths of its citizens, and the city boasts that every inhabitant has at least 580 square feet of green space. Dublin, Ireland is developing Clonburris as an eco-district.

Sydney has coordinated a city-wide retrofit. In Berlin, photovoltaic sheets on south-facing buildings can generate electricity.

In Bogota, Mayor Peñalosa led a crusade against cars while creating a super efficient system of bus transit and building more than 180 miles of bike trails. Bahia de Caráquez, an Ecuadorean city that suffered natural disasters a decade ago, came back as an "Ecological City" in 1999 with hopes to attract eco-tourists. While it is not a city, the Maldives—a small nation composed of low-lying tropical islands—is on track to become the world's first carbon-neutral country within the next ten years. They hope to be widely imitated, since President Mohamed Nasheed said that his country faces "a real threat to our survival" from rising seas.

For another prototype of the possible future, the London suburb of Hackbridge has a neighborhood designed to produce all its own energy and to produce no net increase in carbon emissions. The UK city of Woking reduced its energy use by almost half between 1990 and 2005, with the aid of cogeneration and solar. It is now nearly 90% independent of the grid. Also in England, the village of Ashton Hayes, with 1,000 citizens and help from students at the University of Cheshire, is aiming to become the first town in the world with zero net carbon emissions. The Ashton Hayes community is enthusiastically behind their Going Carbon Neutral Project (for instance, 75% of adult residents attended the organizing meeting). They've produced literature and videos to help other communities do the same thing.

So there are plenty of models. The ambition of various world towns, cities, and islands to be the greenest the fastest is as healthy as competition can get. Let the games begin!

Heating and Cooling

Now in houses with a south aspect, the sun's rays penetrate into the porticos in winter, but in the summer, the path of the sun is right over our heads and above the roof, so that there is shade. If then this is the best arrangement, we should build the south side loftier to get the winter sun and the north side lower to keep out winter winds.

~Socrates, 427-399 BC, *Xenephon's Memorabilia*

There are roughly 100 million households in the United States, the vast majority of them not in Hawaii or Florida, so they require some space heating. In 1997, this need translated into about $45 billion for heating homes. The major energy sources used to heat U.S. homes are (in order) natural gas, fuel oil, wood, electricity (produced mainly by fossil fuels), liquefied petroleum gas, coal, and kerosene. About 86% of residential space heating comes from fossil fuels.

Conservation of heat/coolness in home and commercial buildings can greatly reduce the need for fuels. Some building techniques such as underground houses, double walls, earth berms, and sod roofs provide super insulation. James Kachadorian, a civil engineer and solar home builder, says that after the 1970s energy crisis home-builders developed energy efficiency specifications that are now standard practice such as double-pane high-performance glass in windows, standard wall insulation of R-20 that was previously the roof standard, new standard roof insulation of R-32, house wraps, and much improved vapor barriers.

To retrofit an existing house, one caulks, adds insulation, or encloses entries so that a mass of heated or cooled air does not escape every time the door opens. "Mr. Electricity" says that installing storm windows and doors can reduce by 50% the heat or cooling lost through single-pane windows. Strategic placement of bushes and trees can reduce the chilling effects of wind from the northwest or overheating by the midday sun. Architect Susan Susanka claims that an air-to-air heat exchanger can save about 85% of energy used for heating or air-conditioning, while preserving indoor air quality. +++

Solar Heating: As noted above by Socrates, the ancient Greeks learned to orient their houses to the south for the winter sun; so did the cliff-dwellers of the American Southwest. This southern orientation is the first basic principle of *passive solar heating*, yet countless new homes and buildings are built every year without taking any advantage of south-facing windows. The second simple principle is to build eaves the correct width to keep out the sun in the summer when it is higher in the sky, without losing the lower-slanting winter sunshine. One may also keep out the summer sun by planting deciduous vines or trees in front of the south-facing wall. The third principle is to provide some means of storing the captured heat such as bricks, buried floor slabs, drums of water, or air spaces.

Passive solar is a simple concept; a basic plan of sun orientation, eaves of proper dimension, and strategically placed stone or brick for heat storage is easy to put into effect when building. In order to retrofit a house already built, one can add a sunroom or attached greenhouse, or enclose a porch or patio with glass, with some form of storage to help heat the entire house at night. Architects have created designs such as the Trombe wall—a masonry wall that serves as a solar collector—and envelope houses. Magazines such as *Mother Earth News* and *Popular Science*

over the years have featured a number of owner-built passive solar collectors or "sun-grabbers" as well as designs for owner-built houses that are super-insulated and energy efficient. +++

Active solar heating involves roof collectors that contain chemicals which interact with the sun's rays to provide heat to the house. Some states provide tax credits for solar collectors. In any such purchase, one usually calculates the payback cost. For example, if a solar device costs $10,000 and saves an average of $100/month in heating bills, it will have paid for itself in 100 months or eight years and four months. From then on this heat is free, for the life of the device.

Wood Burning: Wood burning is *not* green unless one harvests the wood sustainably. Used on a large scale for urban heating, it probably would not be. Any plan to burn logging debris and underbrush as biomass in large-scale projects might well converge with U.S. Forest Service tendencies to clear-cut, which creates lots more logging debris and underbrush. This could become a vicious cycle. There is also the energy used in transporting wood fuel. However, on a small scale, homes and buildings might use debris from local sawmills that would otherwise be land-filled, in wood burners specially designed to use sawdust and chips.

Wood is now burned regularly in about 30 million U.S. homes. A comparative study of emissions from fossil fuel heating and wood by James Houck for the EPA indicates that wood combustion has the lowest greenhouse gas impacts of any fuel. Another advantage of wood heating over fossil fuels is that the energy trajectory is simpler, consisting mainly of fairly local transport. However, wood has the highest rate of fine particulate emissions, mainly because most (89%) households that use wood heat are still using old technology wood burners. The EPA established maximum particulate emission rates for wood heaters and since 1992 dealers can't sell new stoves without this certification. The new technology cuts in half the rate of particulate emissions, making it lower than coal heat and electricity production, according to Houck.

Wood heating seems best suited for rural buildings. To convert to sustainable wood heating from your own homestead, you would need at least a four-acre woodlot in order to harvest blown-down wood and thinnings. Those living in cold climates such as the upper Midwest might need as many as ten acres of woodlot. Old methods such as coppicing can reduce the size of woodlot required. Several urban families could together purchase a woodlot large enough for sustainable harvesting. One idea for government subsidies would help poor rural families to purchase newer, more efficient wood heaters that greatly reduce particulates. +++

Geothermal Heating: The standard for efficiency used to be water heating, which is better than hot air for heating buildings. However, the most efficient of all central heating methods is geothermal heating. One can combine either hot water or geothermal with district heating to warm a large building or complex.

Geothermal systems heat, cool, or heat and cool a building by taking advantage of the natural earth temperature, which is about 55 degrees at ten feet below ground level. Several methods do this using a geothermal heat pump, and the same system usually heats hot water. The main drawback to installing geothermal systems is the initial cost, several times that of an air-source system of the same heating and cooling capacity. With energy savings of 30-70% in heating and 20-50% in cooling, the payback comes in five to ten years. Federal, state, and electric utility incentives exist to make initial costs lower. Geothermal heat pumps can earn Energy Star ratings.

Several school systems in my area have built new schools that use geothermal heating. While initially more expensive, officials expect the payback in seven or eight years, with much lower long-term costs for the expected five or six decades than the alternative of gas heat. The

maintenance director for one district says that the two schools there save between $2,000 and $3,000 each winter month compared to traditional heating in similar schools.

Natural gas is the most widely used heating fuel. It emits the least amount of greenhouse gases of any fossil fuel and about one-third the emissions of electricity, which is largely produced by coal. Natural gas also produces the lowest particulate emissions of any common fuel. While useful as a transitional fuel, natural gas is exhaustible, and sources are not always located where most needed. The cost to the consumer has been rising steadily. What people once considered an inexpensive heating choice is no longer so cheap. Newer methods of retrieving natural gas by 'fracking' threaten the environment and human health. Therefore, homeowners and others need to consider their options concerning conservation, wood, geothermal systems, and solar building or retrofits.

Cogeneration or combined heat and power (CHP) takes byproduct heat from generating electricity or other industrial processes for other uses. CHP systems provide electricity and heat, or in some cases, shaft power and heat from one source. Where cogeneration replaces separate fossil fuel generation of electricity or heat, it greatly reduces fuel consumption—and CO_2 emissions. Cogeneration is the most efficient use of fuel, although less than 10% of the world's electricity is currently cogenerated. Massachusetts Institute of Technology spent ten years and $40 million to build the MIT Cogeneration Project to generate the university's own electrical and thermal power. MIT projects that the new technology will save money over the life of the plant, while also reducing emissions by 45% compared to its old technology.

One widespread use for industrial waste heat is to heat a number of residences or buildings in *district heating*. The steam or hot water for district heating systems can come from various sources: waste heat from industry, geothermal, or heating plants built for the purpose. The oldest system operating today has brought warmth to the houses of a French village from geothermal hot springs since the 14th century. Most large district heating systems are in cities of Russia, Eastern Europe, and Northern Europe such as St. Petersburg, Moscow, Warsaw, and Berlin.

Today Sweden is the forerunner in district heating. Over only two decades, from 1981 to 2001, Sweden changed from a country in which 90% of power plants burned fossil fuel and only 10% drew from alternative sources, to the exact opposite. According to Andrew Tolve, "The technology behind Sweden's success [is] the humble district heating plan." This required changing cogeneration plants from burning fossil fuel to using biomass (wasted wood chips from Sweden's lumber industry) and industrial waste heat. A dynamic Swedish leader, Ola Altera, has not only been deeply involved in Sweden's changeover but also helps developing countries such as Brazil and China adapt district heating and other Swedish innovations. Especially where suppliers use waste heat and geothermal sources, these are highly efficient heating systems. +++

A contemporary of Thomas Edison, inventor Birdsill Holly, developed district heating in the United States in the 1800s. The U.S. Naval Academy has used a steam district heating system since 1853. The Empire State Building, the New York Stock Exchange, and most university campuses make use of district heating principles. The U.S. Department of Energy found over 30,000 district heating systems operating in the United States, including large districts in New York City, Indianapolis, Philadelphia, and Detroit. However, much more could be done with cogeneration in this country, especially in cold northern states and the Rockies.

Air Conditioning is a major part of the household electric bill in the U.S. Sun Belt and many other warm places of the world. In the typical American home, AC consumes the biggest chunk

of the electric bill, 16%. Second is the refrigerator, using 13.7%. Rule of thumb: If it is part of your electric bill, it is part of your greenhouse emissions.

While I do enjoy AC on those 90-degree-plus days, most of my life I did without it. Although AC was invented a century ago, the majority of people did not have it in their homes until well after World War II. Nor were stores and theaters always chilled like refrigerators. Before AC, houses in warm climates had traditional architectural features such as deep porches, wide eaves, thick walls, high ceilings, attics, and windows arranged for cross ventilation. Builders sited houses and landscaped them to take advantage of summer shade and breezes. A shade tree in the right place can reduce indoor temperatures by up to 20 degrees and energy use by up to 40%. But after AC became widespread, builders paid for the extra costs of central cooling systems by taking out elements such as wide porches and thick walls. As air conditioning replaced these traditional features, modern houses became dependent on air conditioning.

What people used to do, and some of us still do, is to open their windows at night to let in cool air and close them in mid-morning when the air starts to warm up. They also use a variety of fans. "Mr. Electricity" says "Many of us here in Texas actually get by without using AC—good use of ceiling fans and box fans is really enough. Wearing a wrung-out wet shirt also does wonders, as does a quick rinse in the shower every couple of hours." I lived in Tarpon Springs, Florida without air conditioning. A powerful fan was built into the ceiling in the middle of the house, pulling warm air into the attic, and vents took it out of the attic. The 'Florida room' had louvered windows for catching sea-breezes. I won't say that it was *never* uncomfortably warm, but humans are very adaptable creatures.

However, if you are not ready to give up AC, "Mr. Electricity" has a number of tips for reducing the bill. An AC timer for either central AC or window units will turn off the AC while the resident is out of the house for hours. He says that this will not use more energy than leaving the AC on. Another suggestion is to replace old air conditioners with newer models that use 30-50% less electricity. A cost effective conservation measure might subsidize the replacement of air conditioners more than fifteen years old. Another way to reduce air conditioning is to reduce the sunshine coming in through windows. The California Energy Commission says that 30% of cooling a building is because of solar energy coming through the glass. Reflective film can block 40-60% and solar screens can block 60-70% of heat from sunlight. Mr. Electricity cautions that one should buy the type of film or screen that doesn't block much light.

People in hot, dry climates can use an evaporative cooler ("swamp cooler") that uses a lot less electricity than conventional air conditioners, although swamp coolers do cycle a lot of water and do not work well in humid climates. A solar chimney or thermal chimney is a method to improve a building's natural ventilation which has been in use since the time of the Romans, especially in the Middle East. It can take the place of air conditioning in hot, dry areas. Radiative cooling methods involve an exterior water wall or roof pond system.

A number of architectural and landscaping features can greatly reduce or eliminate the need for air conditioning. The underground house takes advantage of the surrounding earth's stable temperature. A semi-underground house has an earth berm raised to just below window level. This makes use of the earth's insulating properties and prevents winter drafts at floor level. Porches are coming back, in the New Urbanism movement. Eaves can be designed to prevent the sun's heat from reaching the windows in summer, allowing in the slanting rays of winter. Deciduous trees or vines may be planted on the south and especially west sides of the house to provide shade. +++

Besides geothermal cooling with heat pumps, there is a lower-tech way to cool a house or boost an air conditioner with the use of earth cooling tubes. In the closed loop system, inside air blows through a U-shaped loop of plastic or metal tubes placed six to 10 feet below ground level. (Some systems circulate water.) The loop of tubes may be 100 to 500 feet long. The builder may direct the incoming air, cooled by its subterranean passage, into the house's ductwork or into a mechanical air conditioning system to reduce its load. It might be difficult to engineer a retrofit after the house is built. The U.S. Department of Energy website about earth cooling tubes is quite negative about their potential. However, a Wikipedia article on the subject states: "Earth tubes are regularly used in Europe to pre-heat (or pre-cool) air for the whole-building heat recovery ventilation systems that are used in buildings designed to the German Passive House standard."

If you are using the convective cooling model of letting in cool night air to drive out the warm air, the Arizona Solar Center recommends that the windward side should have low open vents or windows, while the leeward side (away from breezes) should have high vents or windows that are substantially larger in area, by 50 or 100%, than those on the windward side.

Painting the roof white or planting it green will reflect the sun's heat instead of absorbing it. A blog commenter says that 50 years ago his father owned a company in Florida called Kool Roof that painted roofs white. There's nothing new under the sun! He also says there is now an Energy Star-certified roof paint for this purpose. Another comment suggests that all local, county, state and federal highway departments as well as all Walmart and big box stores paint their black asphalt parking lots and roads white. (Alternatively, the Netherlands city of Avenhorn has put pipes under an asphalt road to siphon heat to a nearby apartment building.) +++

Active solar air conditioning uses solar thermal energy conversion or photovoltaic electricity with desiccants, heat pumps, solar-driven fans, geothermal wells, or combinations. A recent Australian innovation, Sun Lizard, is a combination passive/active solar system that can either cool or heat a building. In the U.S., a 2007 law provides funding for new solar AC research.

Light Pollution: Landing in an airplane at night, it is thrilling to see the pattern of lights that rise to meet you. But there is a cost for all the artificial light reflected into the sky from homes, businesses, signs, and streetlamps—a cost in wildlife, human health, and carbon emissions. Up to 90% of the light is wasted and Susan Weiner says it can extend as much as 100 miles beyond a large city's borders, a constant twilight that interferes with migration and reproduction of wild animals, or exposes them to predators. In North America alone, 100 million birds die yearly from collisions with lighted structures. Newly hatched sea turtles, trying to reach the ocean with its reflections of moon and stars, crawl instead towards roads and buildings and die there. Artificial light can also disrupt natural growth cycles of plants and coral reefs, and it has been linked with higher cancer rates in humans. All life on Earth is connected to light and its daily cycles, says Travis Longcore, author of *Ecological Consequences of Artificial Night Lighting*. "We have completely altered the system that was predictable throughout all of human history."

Because of this light haze around cities, most of us can't even look up and see the stars and meteor showers. According to the International Dark Sky Association (IDA) light pollution costs $2 billion worth of energy a year. Most of that electricity comes from coal-burning power plants. Some ways to combat light pollution are conservation—do we really need suburban competitions about who can set up the most elaborate Christmas display?—energy-efficient light fixtures that shine downward, lower wattage, and time controls. The IDA works with lighting manufacturers and gives out an IDA Fixture Seal of Approval for environmentally-friendly fixtures. Some cities especially in the U.S. northeast have changed zoning so lights have to point down.

Public Transportation: Another major goal in the green cities movement is to make transportation more sustainable. Besides mass transit, bicycle and pedestrian trails, and minimizing auto traffic, another energy-saving approach is to prevent sprawl. People moved into the suburbs because of cheap gasoline in the oil boom of the 1950s. Now that things have changed, people are moving back into the city limits. This not only saves petroleum but also protects agricultural land and open space from increasing development. When people live at higher densities within a city, instead of scattered around the countryside in one-story ranch houses or mini-mansions, mass transit is more cost-effective.

Some people seem unable to visualize life without a family car or truck, but many of us know from experience this is quite possible. My parents did not own a car until I had grown up and left home. Cities such as Minneapolis and Cleveland had streetcars and buses, and in an emergency you could call a cab. There were trains for traveling between cities in relative luxury. Two streetcars and a transfer took me to high school in Cleveland. Virtually none of my classmates owned cars; a few were allowed to drive the family car, if there was one, on special occasions such as a prom. Such was life only sixty-six years ago. A decade later, Cleveland tore up its streetcar tracks, thanks to General Motors and its co-conspirators. This happened in many other cities too. (See James Kunstler, *Geography of Nowhere*.)

In the 1970s (and probably today), San Diego had a very good bus system, making it unnecessary to drive on any of the formidable freeways of Southern California. San Diego even had a trolley on which you could ride right across the border into a foreign country for a sightseeing tour. Chicago has its El, Paris has its Metro, Berlin has its U-Bahn, and in fact every large city worth its salt has some kind of mass transit system.

In rural states such as Arkansas few cities are large enough to afford much of a bus system. Southerners in general drive more miles than the rest of the nation does. Yet in my area plans are stirring to make use of the old railroad tracks to set up a light rail line that would connect ten or twelve small cities and towns currently linked only by highway culture. The approaching idea is that rather than continue subsidizing auto traffic, building more and more highways to become obsolete because of Peak Oil, we would instead put some of that money into mass transit.

Another consideration is that in our car-dominated system, low-income families have to spend a large fraction of their income on transportation—on average, 40 cents out of every dollar, notes Peirce. But with public transportation, low-income people can get to their jobs much more economically, leaving a greater share of their earnings for other necessities.

No gpm. The no-gallons-per-mile vehicle is otherwise known as the bicycle. There are more than a billion bicycles in the world, with almost half of them in China. While 77% of Chinese and 27% of Dutch bicycle to work, only 1.6% of Americans do so—although up to three-fourths of U.S. households own bicycles. A survey by a University of Washington professor found a typical bicycle commuter in North America was a male professional, age 39, with household income above the median. His major motivations were health, fitness, and the environment. This contrasts both with European countries where a wide range of ages and socioeconomic classes commute by bike, and with less-developed countries where hardly anyone can afford a car so that a bicycle is a necessity.

According to the U.S. Census, the state where the largest numbers of people commute to work by bicycle is California. Florida is next, but the third largest number of such commuters is in the far-from-balmy climate of New York City. Numbers help safety. When a low share of the population is on bikes, it is more dangerous for bicycle users.

To encourage American cyclists, May is designated as 'Bike Month.' Oregon Rep. Earl Blumenauer says that his home city of Portland, after adopting bicycle-friendly policies such as expanded bike lanes and official bike routes found that residents used their cars much less than the American average. Blumenauer has bicycled to work in Washington, D.C. for 12 years and heads the Congressional Bicycle Caucus. He says that cities of every size should have a bicycle master plan. Countries such as Netherlands, Denmark, and Germany began working on bicycle policies many decades ago. Some recent innovations are secure storage, cycle facilities that have showers and personal lockers, and safety training.

In the last year or two, spurred by high gasoline prices, bike-sharing programs have spread quickly through Europe. The Velib program in Paris is incredibly successful, with 20,000 bikes available at 1,450 stations across the city, equipped with anti-theft and global positioning devices. Velib is partly supported by advertising at bus shelters. European cities with bicycle rental programs (often automated) now include Lyons, Barcelona, Stockholm, Amsterdam, Vienna, Rome, and about 100 other towns in Italy alone. SmartBike, the first large-scale U.S. bike-sharing program, began in Washington, D.C. in 2008, and similar systems are underway in a dozen or more other cities especially in the Southwest and West Coast.

Several European cities are greatly expanding their bicycle routes. In Bolzano, Italy, bike paths crisscross 80% of the city. In Copenhagen, about half a million people commute to work or school by bicycle each day, and the city is installing $47 million worth of 'bicycle superhighways' into the suburbs. Rolf Priesnitz says that London is putting up to three quarters of a billion dollars into two-wheeler superhighways connecting with the city's center. The UK is also investing in infrastructure throughout the country and campaigns to promote biking in 12 Cycling Demonstration Towns, starting with Bristol, which aims to double its rate of cycling.

Meanwhile, Lloyd Alter posts from Toronto that cyclists in North Americans are "fighting for infrastructure a few hundred meters at a time." Alter lists the qualities of a bicycle superhighway: smooth surface free of leaves, ice, and snow; direct with no detours; clear signage; 'service stations' with air and tools; sufficient width to overtake other cyclists; safe and quick crossing priority for cyclists at cross streets; and Green Wave for cyclists through sections with frequent stop lights. The Green Wave means that cyclists moving 20 km/h or faster hit green lights all the way. It is already in place on at least three main routes in Copenhagen.

Other aids and inducements for bike riders are cyclist-actiated lights at key intersections, bike carriers on buses, sewer grates that don't trap bike wheels, and programs to eduate both cyclists and motorists. Some companies install showers and bike lockers to encourage commuters.

In Japan and many European countries, a major and growing form of commuting is bike-and-ride, or the combination of bicycles and mass transit (mainly railways). In Japan, commuters park about 3 million bicycles at rail stations each day, several times more than the number of commuter cars. In Denmark, over one-fourth of rail passengers arrive by bicycle, and even more in the Netherlands. Every Dutch railway station has bicycle parking, and many spaces are guarded. Bicycle rental and repair services are often available near the train station.

City traffic can be so congested that cars barely go faster than people using their feet. Enter the pedicab. There are 350 pedicab garages in Manhattan alone. Denver, San Diego, and Long Beach also have fleets. The idea could spread even faster once someone devises a set of model regulations for cities with pedicabs. In big cities delivery of messages, letters and small packages goes faster by bike. Across North America bike businesses include food delivery and even moving companies. For instance, in Ames, Iowa a business called Bikes At Work provides delivery service from local stores and also furniture moving—even in the Iowa snow. Cargo

bikes have been used for years in other countries. The type known as the "long john" originated in Denmark and Netherlands about 90 years ago.

Car-Free Cities: Older cities on other continents have always closed certain areas to cars—ancient or medieval streets simply not wide enough to hold car traffic. Today, many population centers deliberately keep out cars to reduce air pollution, auto accidents, traffic congestion, and noise, as well as oil dependence and greenhouse emissions. A city or neighborhood may close some streets to vehicle traffic, devoting "living streets" to pedestrians only, including children at play. A city's overall design may favor pedestrians, bicyclists, and mass transit rather than autos.

Some options to reduce the need for distance transportation include bicycle infrastructure, mass transit, urban agriculture (to reduce trucking) and telecommuting. The goal is to have almost everything one needs nearby, ultimately transforming cities, towns, and villages into human-scale communities. A network of urban planners, social activists, and renewable energy advocates promote Car Free Cities, a movement that brings together walkers, cyclists, and transit riders from around the world as a political force to challenge the dominance of cars. Car Free Days and similar official events temporarily reduce the number of cars on city streets so people can see what that would be like. Road protests such as Reclaim the Streets became frequent in the UK about 15 years ago in reaction to a major road building project—people would take over major roads and highways to stage a party.

Bicycle activists have organized some noteworthy events such as Critical Mass rides where cyclists come out en masse to dominate the traffic, drawing public attention to how unfriendly cities are to bicycle riders. Accused of stopping traffic they respond, "We are traffic." Such events in Budapest, drawing as many as 20,000 to 30,000 riders, influenced city and national policies and greatly increased daily cycling. A distinctive form of Critical Mass is the World Naked Bike Ride (WNBR) which began in Zarogoza, Spain in 2001 and has since spread around the world. Clothing is optional and cyclists ride nude or nearly so to express their vulnerability to vehicular traffic ("Stop the indecent exposure to vehicle emissions!"). They also draw attention to other causes such as naturism, sustainability and peace. Arrests are rare.

World-wide, many cities and districts are already car-free or nearly so. Car-free areas with at least 50,000 people are in Venice, Italy; La Rochelle, France; Guanajuato, Mexico; Gent, Belgium; and Fes el Bali, Morocco—the last is currently the world's most populated car-free district with 156,000 people. Buenos Aires is very walkable, with transit-oriented development. Other cities with notable car-free planning are Copenhagen, Paris, Freiburg, and Village Homes in Davis, California. Several new 'Bicycle Cities' are in the works in the United States.

Smart Growth: For three decades, the American design movement called New Urbanism has worked to reform real estate development and urban planning in order to create more diverse, livable, and energy-efficient cities. New Urbanism takes inspiration from traditional neighborhood designs that existed before automobiles and suburbs took over.

New Urbanism opposes sprawl, defined as "any type of development that does not create cities, towns, and villages composed of neighborhoods and districts." Examples of sprawl are isolated subdivisions, gated or walled developments, isolated office and industrial parks, strip commercial development, and schools disconnected from the urban areas they serve. Suburban development replaces farmland and woods with large houses, malls, heat-holding pavement, and lawns that are energy and water intensive. Sprawl leads to a very inefficient infrastructure, providing utilities and public services to a few people spread out over a large area.

Spread-out cities require longer commutes to work, with greater costs. According to an online calculator, assuming gas costs $2.30 gallon, and counting maintenance and depreciation, the average commuter with a 30-mile daily round-trip spends $4,438 a year just for transportation. That does not count fender-benders. Health problems are an additional hidden cost, including neck and spine difficulties, high blood pressure, and lack of time for exercise. Instead, with greater housing density, city buses don't need to travel so far or use so much gas.

Sprawl is expensive for long-time residents whose taxes increase to finance uncontrolled and inefficient growth, with school costs perhaps the largest hidden cost. Sprawl forces cities to build new schools on the outskirts and close down existing schools closer in. Another expense for cities is busing students to school. Impact fees charged to developers usually bring in only a fraction of actual costs.

Preventing sprawl includes revitalizing cities so that people will want to stay there or move back to them. The basic strategy is to improve and preserve existing neighborhoods and subdivisions, encouraging infill (redevelopment of existing developments). Some of the priorities and strategies employed in Florida and elsewhere to prevent sprawl include preserving large parcels of land as natural systems to form a permanent greenbelt that bounds development, and supporting walkable neighborhoods, with a mixture of uses and a public space at the center. An ideal neighborhood is 40 to 160 acres. To include neighborhood public schools and stores, a neighborhood's minimal density is ten units per acre, says the Florida document, since "large areas developed at lower densities tend to become sprawl." The human scale of such neighborhoods, with 400 to 1,600 families or so, means that many people know each other face-to-face and can form a true community.

An important part of this strategy is affordable housing. Two non-profit pioneers in green building, Enterprise and the Natural Resources Defense Council planned by 2009 to have built 8,500 prototype homes that are both environmentally sustainable and affordable, hoping to make sustainability the standard for affordable housing. Such new housing must be compact, close to public transit, and in neighborhoods where shops are within walking distance.

Another side of sprawl-prevention is protecting farmland and wildlife from encroaching cities. In California, a 40-year-old law called the Williamson Act helps to protect agricultural and open space lands by reducing property taxes for landowners who agree to keep their land open or in agricultural use for ten years or more. However, some areas such as Santa Clara County lack adequate enforcement so that "mega-mansions" constructed on Williamson Act properties drive land cost out of reach of genuine farmers and ranchers.

The majority of Americans no longer seek the American Dream in auto-dependent suburbs. Between the rising cost of gasoline and the many foreclosed houses, suburban areas are already in decline. Some of these were 'boomburbs' or accidental cities that grew without any plan. Julia Levitt notes that "several decades of bad development have resulted in unchecked sprawl and played no small part in our global financial meltdown." But now what do we do with all those empty malls and office parks, and decaying subdivisions? One solution for the closer-in suburbs is to turn them into neighborhoods. Extend public transportation to them to encourage compact development and provide incentives to encourage infill. Levitt says the newer outer-ring suburbs will require more creative solutions, such as turning empty malls into apartment buildings.

Controversies: City redevelopment may run into problems from quick fixes, lack of foresight, special interests, discrimination, and corruption. For instance, 'gentrification' occurs when the rebuilt city center attracts a population of wealthier renters while lower-income people who used to live in the run-down area lose an affordable place to live and may become homeless.

There is always a danger that those who run things, in the name of attacking blight or revitalizing the city will use tools such as eminent domain for dubious purposes. In one famous example, New London, Connecticut, desirous of extra tax revenues from a new commercial development, used eminent domain to destroy a working-class neighborhood that was *not* blighted. The Supreme Court gave a very disappointing verdict in favor of the city. At the other extreme, some people feel that private property rights are absolute and that nobody has the right to tell them how to use their land. My town has constant struggles over development. For example, they argue about the location of new schools, which move in the direction that the town is growing but then encourage more growth.

Another obstacle to the greening of cities is the sometimes archaic worldview of Homeowner Associations (HOA). Currently, about 60 million Americans or one-fifth of us live in residences regulated by homeowner associations. HOAs commonly mandate a minimum square footage, although environmentally-minded architects and builders are trending toward smaller houses. Stan Cox says HOA architectural review boards, which are often not elected, have sweeping powers to enforce restrictive covenants which determine many other details, some of which affect sustainability. For instance, they may prohibit outdoor clotheslines, solar devices and wind generators, awnings, vegetable gardens, and native wildflower or xeriscaped yards rather than lawn. Covenants may insist on details such as these: "Each residence shall include an attached garage for a minimum of two cars and a maximum of three cars." "Each lot shall maintain at least two continuous dusk-to-dawn lights." "Sprinklers shall be installed in the front yard of each residence." Those who don't follow the rules are subject to fines and even foreclosure. Cox says the HOA attitudes are rooted in "outdated aesthetics and plain old snobbery." But most of the people in these neighborhoods believe HOA rules are protecting their property values.

Some states have passed laws to keep HOAs from banning practices that are environmentally responsible especially the use of solar panels. Cox recommends living in the four/fifths of the nation's neighborhoods that don't have private covenants. Websites and organizations are forming to deal with the restrictions. One dissident group is Project Laundry List, whose executive director Alexander Lee claims that dryers account for about six percent of U.S. residential use of electricity. A clothesline activist calculates that a family that line-dries laundry for a family of five could save $83 monthly in electric bills. It may be that the current deluge of foreclosures and the economic crisis in general will weaken the grip of HOAs.

Urban Agriculture: It is risky for a cluster of thousands to depend entirely on truckers bringing in their groceries at a time of volatile oil prices and economic dislocation. For real self-sufficiency, a city should have local sources of food, such as farmers' markets and community-supported agriculture (CSA) in which a group of families arrange ahead to buy a farm's produce. In London, the group Growing Communities keeps 400 households stocked with organic fruit and vegetables from small local farms or their own gardens developed from unused city lots. There are several ways to grow food right in the city itself. Four such proposals are urban community gardens or allotments, roof gardens, living walls of food, and sky farms. Community gardens are generally tended by a group of people, while allotments are garden parcels leased or assigned to individuals or families. Allotment gardens are common in the UK, Europe, Japan, and some other countries; some gardens in the UK and Denmark go back to the 18th century. When times are hard, the gardens are tended for food security but during prosperity, they become more recreational and numbers decline. The practice seems to be growing popular again. In

2008, there were an estimated 330,000 allotment gardens in the UK, with another 100,000 on the waiting list. Germany has about 1.4 million such garden plots.

Lester Brown says there is "a huge unrealized potential for urban gardening" in many U.S. cities, noting that Chicago has 70,000 vacant lots and Philadelphia has 31,000. A number of such projects are underway, with at least three dozen in New York City according to Carl Flatow, who lists other projects in Boston, Philadelphia, Chicago, Milwaukee, and Oakland. In Detroit, recording artist Taja Sevelle founded Urban Farming in 2005, got the city to donate the lots of 20 foreclosed properties, and found volunteers to plant and cultivate community vegetable gardens. The gardens have no fences, and anyone can pick the produce and take it home for dinner. Now the program is spreading to Atlanta, Los Angeles, and other cities.

The custom of keeping a few chickens in the backyard is growing, not only to save money but also to assure the health and freshness of eggs. In the UK, the Henkeepers' Association estimates 350,000 members. Across the United States, many municipalities including my own are relaxing their animal regulations to allow this custom (but most still ban roosters).

Roof gardens and vertical gardens can produce food, as well as being decorative and performing the environmental functions mentioned earlier. The Urban Farming Food Chain is a joint project of Sevelle's group and George Irwin's Green Living Technologies which has set up a food-raising wall system in the Skid Row area of Los Angeles. Each 30 foot by six foot high wall contains 4,000 edible plants. The living wall can attach to an adjacent building or be part of a freestanding metal framework. The group hopes to spread quickly in LA and across the nation.

Sky Farms are basically skyscrapers that grow food on all or most of their levels in a controlled environment. Using greenhouse methods such as hydroponics they could grow food year-round. Energy and environmental benefits come from reducing the number of food miles between rural farms and city food consumers and water recycling. Sky Farms would allow the restoration of degraded farmland and could help feed city residents during a weather or economic disruption. The concept originated with Columbia University professor Dickson Despommier and his graduate students in 1999. Projects are still in the proposal or construction stages, including one in Toronto, Canada planned to grow as many crops on its 58 floors as produced by a 420 hectare farm (roughly 1,000 acres). Another Sky Farm, proposed for Las Vegas, would feed an estimated 72,000 people a year. But a pilot Sky Farm is needed to test the concept.

BOOK TWO: Meeting the Big Challenges

Nothing short of everything will really do.
~Aldous Huxley, *Island* (utopian novel) 1962

We'd better enjoy a good challenge, because humanity faces something like a pentathlon, with a few extra tasks thrown in just for Americans. This book is about how to overcome species threats. It leaves out a lot of important subjects, many of which dominate the news. Our focus here is on long-term and sustainable changes. We are trying to look further down the road.

Let us focus on five world changes we need as soon as possible (ASAP). These changes have to do with preventing more *climate change* and dealing with what we have already set in motion, achieving *nuclear disarmament and preventing war*, working toward a *sustainable population and an end to poverty*, devising *a better economic system*, and controlling *dangerous technologies*. These are interrelated concerns but we deal with them separately, in some cases going into detail about proposed changes because authorities and media have not done so.

Some of our most basic challenges are off the radar screen entirely. We often learn about problems in such a scary, sketchy way that nobody wants to think about them. "The oceans are dying—well, what can I do about it, anyway?" Mainstream media are much better at alarming us than at providing potential solutions, especially on the large and rapid time-scale we need. Sometimes good ideas come from another country, and we fail to hear about them because of the Plastic Curtain. In many cases, we do not hear about solutions that might interfere with existing industries and power-elites, or sometimes because they contradict the conventional wisdom.

Besides this problem of the missing information, other obstacles have held us back from meeting challenges: the old tendencies to denial, to blame instead of looking for causes, to view through narrow frames, to oversimplify, and to look for a quick fix or a magic bullet. We resist change. We are susceptible to propaganda and 'follow the leader' without asking necessary questions. Certain belief systems keep us divided and ineffective when we need to be acting as one species. The ideology of nationalism and its accompanying militarism is more dangerous than ever in the age of nuclear weapons and increasingly lethal non-nuclear weapons.

Our circumstances require radical changes of direction, not just reforms. We can't count on our leaders to do it all, and our leaders are seldom as forward-looking as we had hoped. Politics is the art of the possible, and it's not clear how much dramatic change is possible. However, the first step is to recognize that a transformation must come. We need to deal with the following challenges as rapidly as possible. All of them are urgent.

Part One: Two Existential Threats

Chapter 1
Climate Change

The door is closing. I am very worried….If we do not have an international agreement, whose effect is put in place by 2017, then the door to [holding temperatures to 2^oC of warming] will be closed forever.
~ Fatih Birol, chief economist at the International Energy Agency (IEA), November 2011

Global climate change is not only a wicked problem but what some call a *super wicked problem* because of three added traits, according to Wikipedia: 1) Time is running out; 2) There is no central authority; 3) Those who are seeking to solve the problem are also causing it.

Five or six years ago, American concern about climate change seemed to reach critical mass. The award-winning 2006 film "An Inconvenient Truth" put the challenge of climate change out front and center so that mainstream media could no longer ignore it. The same year, another documentary film, "Who Killed the Electric Car?" showed that renewable energies might be more viable than we had been led to believe. Suddenly the U.S. media provided a deluge of information about renewable energy, much of which had been around years earlier.

Unfortunately, Al Gore's leadership allowed conservatives to frame climate change as a political issue, while unremitting propaganda came from the American Petroleum Institute (API) and Western Fuels Association through PR firms, media conduits, and "think tanks" such as the Heartland Institute. This constant barrage has had an effect on public opinion. According to surveys, the number of Americans who now think there is good evidence the world is warming and those who think human activities are causing rising temperatures have both declined greatly since 2006. Numbers are much lower than surveys of citizen opinion in most other nations. But even where citizens are more aware, few world governments have so far risen to the occasion.

With climate change turned into a political issue and constant propaganda in the mass media, many people are confused about whether the climate actually is changing or how. Many do not know the difference between climate and weather, between climatologists and weather forecasters on television. They are not practiced in the scientific method. Since they don't understand what it is that scientists do, how they work or reach conclusions, they can easily be persuaded that scientists are corrupted. It's the old 'kill the messenger who brings bad news.'

Let's briefly summarize once more what we know about climate change, which is any long-term alteration in global weather patterns. Our immediate concern is rising temperatures and increased storm activity because of the greenhouse effect. As glass traps heat in a greenhouse or parked car, so do certain gases in the atmosphere trap energy from the sun. Many human activities—industry, agriculture and modern patterns of daily living—produce these greenhouse gases. Climate change is also called global warming. The latter term allows simplistic thinkers to

imagine the only problem might be a little extra heat. They don't think ahead to how melting of ice sheets in Greenland and West Antarctica would raise ocean levels, the fact that many of the world's great seaports and capital cities are on coasts, or that many densely-populated island nations and other low-lying countries from Netherlands to Bangladesh would be inundated by higher seas. They don't consider how 'a few degrees' could change ocean currents, wind patterns, and storm formation to create hurricanes and floods.

Seven years ago the science academies of 11 nations signed a joint statement in response to climate change, defined by the United Nations Framework Convention on Climate Change (UNFCCC) as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." The science academies stated in 2005:

> There is now strong evidence that significant global warming is occurring. The evidence comes from direct measurements of rising surface air temperatures and subsurface ocean temperatures and from phenomena such as increases in average global sea levels, retreating glaciers, and changes in many physical and biological systems. It is likely that most of the warming in recent decades can be attributed to human activities. The warming has already led to changes in the Earth's climate…. Scientific understanding of climate change is now sufficiently clear to justify nations taking prompt action.

It is worth going into some detail about energy options because the mainstream media has not fully educated the public about alternatives, and propagandists who deny the problem have said far too much. The public has heard of wind-power but many assume the only form of solar energy is solar photovoltaic electricity, or that energy conservation means 'shivering in the dark.' The media vilified President Carter when he brought up the subject of energy conservation.

Our Target is 350parts per million (ppm)

If humanity wishes to preserve a planet similar to that on which civilization developed, paleoclimate evidence and ongoing climate change evidence suggests that CO_2 will need to be reduced from its current 385ppm [now 392ppm] to at most 350 ppm.
~Dr. James Hansen, head of NASA Goddard Institute for Space Studies

Just a year after the Intergovernmental Panel on Climate Change published their landmark report on global warming, new studies suggested that the IPCC panel had underestimated its potential severity. Carbon emissions are increasing more rapidly than predicted, mainly because countries like China and India are greatly increasing their use of electricity produced by coal plants. Chris Field of Stanford, who was one of the IPCC authors, said that without decisive action, higher temperatures could thaw the Arctic tundra, potentially releasing CO_2 from its estimated 1,000 billion tons of carbon. Field said, "We don't want to cross a critical threshold where this massive release of carbon starts to run on autopilot."

Some people downplay human-caused climate change by citing the inadequacies of computer models. However, IPCC statements referred to *measured* evidence of global warming. Across the world even non-scientists who pay attention to what goes on around them can see shrinking glaciers, more storms and wildfires, expanded ranges of plants and animals, and dwindling numbers in other species that lack evolutionary time to adapt to new conditions. The record heat and drought in 2012 convinced many Americans who had not been previously convinced.

Reports of new scientific findings appear constantly, of which the following are only a sample. A study from the U.S. National Center for Atmospheric Research found that the world's drought-stricken areas rose from 12% of the total in the 1970s to 30% in 2005, with about half the expansion resulting from warmer temperatures rather than lower rates of precipitation. In summer 2009, Australia was suffering its seventh year of drought, which many feared could become a permanent condition. In 2011 a persistent drought in southwest China left 14 million people without sufficient drinking water. Northern China was even drier. Mexico's most severe drought ever recorded left two million people without water in 2012. Wildfires burned in several parts of drought-stricken Greece. Many African countries are suffering from drought.

In Texas, officials said the ongoing drought killed up to 10% of the state's trees in 2011. California's drought in 2009 may have been the worst in its history, and wildfires were blazing close to Los Angeles. U.S. wildfire seasons in 2011 and 2012 were record-breaking.

Scientists have found evidence that the Arctic region is warming at a rate faster than the rest of the world. This is happening a decade or more before predicted, raising concerns that the Arctic has already reached a climatic tipping-point toward ice-free summers, which could occur within the next 20 years and then become a permanent condition. In 2003, 62% of the Arctic's ice was multi-year ice (ice that has survived several summers) but by 2008, only 32% was multi-year. Between 2004 and 2008, the multi-year ice cover shrank 595,000 square miles.

Skeptics make jokes after every local snowstorm, but globally, the 10 warmest years on record came between 1998 and 2010. The 12-month period from May 2011 to April 2012 was the hottest in U.S. history.

The National Oceanic and Atmospheric Administration (NOAA) said that global ocean surface temperatures in June 2009 were the highest recorded since records began in 1880. NOAA also said that the United States suffered a dozen climate disasters in 2011 that each caused damages of $1 billion or more—another record. Because of more frequent and severe hurricanes, insurance rates rose markedly in U.S. coastal areas from New York to Texas. Between 2001 and 2006, the average homeowner policy increased by 77% in Florida; Allstate no longer writes any new policies there. The world's second largest reinsurer, Munich Re in Germany, said in its annual assessment: "It is now very probable that the progressive warming of the atmosphere is due to the greenhouse gases emitted by human activity."

Five key environments are most likely to feel the early pressures of climate change. These are low-lying islands, arid regions, high elevations, polar areas, and low-lying coasts, which contain many of the world's largest cities. In wealthy nations, 86% of city-dwellers live on coasts (41% in low-income countries).

Island nations are already affected by rising sea levels and are taking steps to preserve themselves. Vanuatu and Tuvalu have considered seeking legal recompense from nations with high per capita CO_2 emissions such as Australia and the U.S.

The former president of the island nation of Palau, Tommy Remengesau, said:

> Palau has lost at least one third of its coral reefs due to climate change related weather patterns. We also lost most of our agricultural production due to drought and extreme high tides. These are not theoretical, scientific losses—they are the losses of our resources and our livelihoods.... For island states, time is not running out. It has run out. And our path may very well be the window to your own future and the future of our planet.

The Oil Convergence: Even those who deny that global warming exists or that it is caused by human activities might consider other extremely important reasons for the United States and

other top oil consumers to reduce their dependence on petroleum as rapidly as possible. These are Peak Oil, wars over oil, environmental destruction by oil spills, and the direct effects on human health of fossil fuel emissions. According to strategy analyst Tsvi Bisk, the cost of oil includes about $50 billion/year spent by the United States policing the Persian Gulf between the two Iraqi wars. He says that true accounting would make imported oil at least $10 per gallon at the pump today. (Others have suggested even higher figures.)

It is widely agreed that oil is currently near the peak of world production and from now on will decline in amount while it rises in price. The imminence of Peak Oil is corroborated by such insiders as former U.S. Energy Secretary James Schlesinger, the CEO of Royal Dutch Shell Jeroen van der Veer, and British Foreign Secretary David Miliband. Another strong possibility is that the countries which export more oil than they use will reduce their exports even faster than the actual decline in oil stocks.

Energy journalist Chris Nelder in the *Futurist* points out that oil exporters with plenty of petrodollars tend to invest in domestic development and energy consumption. Some of them subsidize fuel use by their own people (Venezuelans pay as little as 19 cents a gallon). Some such as Saudi Arabia are putting aside reserves for future generations (or for selling to other countries at high prices while they invest in other energy sources).

Bisk notes that production from Mexico's biggest oil field dropped 34% in 2008. Norway is the world's third largest oil exporter, but production in the North Sea is in decline. A model by two petroleum geologists, Jeffrey Brown and Samuel Foucher, predicts that the top five oil exporters (providing half of the world's exports) will approach zero net oil exports around 2031. Thus countries which use more oil than they produce may have to replace this industrial essential in the course of one generation.

Michael T. Klare, author of *Blood and Oil*, notes that future oil and gas will be from unconventional sources, harder and more expensive to extract, more environmentally destructive. These fields are deep offshore, Canadian oil sands, the Arctic, or shale rock. Recent discoveries of giant oil fields in the Gulf of Mexico and off the coast of Brazil do not change this picture because the fields are, respectively, 35,000 feet or one-and-a-half miles undersea, then underneath several miles of rock, sand, and salt that will require costly, cutting-edge drilling equipment. To develop oil sands in northern Alberta would clear vast tracts of virgin forest, consume enormous amounts of water and natural gas, and pollute the local waters. Production of oil and gas in the Arctic will encounter huge obstacles from winter conditions. Extracting oil from shale rock has similar problems and could destroy large parts of the Rockies.

Richard Heinberg notes four possible strategies nations might use in response to declining oil: A. "Last One Standing" (fierce global competition for remaining oil); B. "Powerdown" (global cooperation to reduce energy use); C. "Denial" (hoping for a miracle); and D. "Building Lifeboats" (trying to make local areas sustainable). Obviously, B and D use the powers of foresight and cooperation, while A and C represent Stone Age thinking that we must evolve past. Will the United States be prepared to replace the two-thirds of oil that we import before it goes off the market? It depends on which strategy we choose.

By replacing fossil fuels, nations would lose their rationale for risky games of power politics and Mideast wars over petroleum. Another benefit is that Peak Oil will not catch people unawares. Inexorably rising oil prices, in a nation of unprepared people dependent on gas-guzzlers for transportation, would likely lead to economic and social dislocation, making scapegoats of minorities, and quite possibly violence and a police state.

What Are the Greenhouse Gases? First off, you may add the following to your alphabet soup: the short name for a gas that can trap heat in the atmosphere is a GHG. Besides the direct burning of fossil fuels, the following activities release substantial amounts of GHGs: livestock digestion, manure and cesspools, cement production, rice farming, forest clearing, landfills, nylon production, refrigeration, aluminum production, semiconductor manufacturing, and electrical transmission and distribution. Six major GHGs identified by the Intergovernmental Panel on Climate Change (IPCC) are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The last three, known as F-gases, are all human-made, very potent GHGs.

Chemical companies developed the F-gases to replace chlorine-containing compounds that were destroying the ozone layer and therefore banned by the 1987 Montreal protocol. The most common F-gases are HFCs, several thousand times more potent than CO_2, with increasing amounts used in refrigeration, air conditioning, and other uses. The large chemical companies across the world which produce HFCs have tremendous lobbying power, yet Greenpeace says that HFCs can easily be replaced by natural refrigerants already on the market. The organization developed the GreenFreeze technology used in 300 million refrigerators world-wide but currently illegal to buy or sell in the USA and Canada. Companies such as Coca-Cola, McDonalds, and Unilever have joined with UNEP and Greenpeace in an initiative to use the natural technology in uses such as vending machines.

Helen Caldicott says the process of uranium enrichment emits the chlorofluorocarbon CFC_{114} which is a very potent GHG and also depletes the ozone layer. A 2009 *Futurist* article refers to yet another GHG, nitrous trifluoride (NF_3) which traps heat 17,000 times more effectively than CO_2, yet is not covered by the Kyoto Treaty. It can stay in the atmosphere up to 740 years. NF_3 is produced in the process of manufacturing three popular products: LCD televisions, computer circuits, and thin-film solar cells. Manufacturers have some alternatives for reducing these emissions or substituting more eco-friendly chemicals such as hexafluoroethane or fluorine, although the replacements have other disadvantages.

Each of the six major GHGs has a specific Global Warming Potential (GWP) based on its heat-trapping properties. CO_2 is the foremost danger because it is the most prevalent greenhouse gas, although it has the least GWP. Methane and nitrous oxide are fairly prevalent and quite a bit more potent than carbon dioxide. The less common greenhouse gases sulfur hexafluoride, perfluorocarbons, and hydrofluorocarbons, along with CFC_{114} and NF_3 have the greatest GWP.

Two other kinds of polluting emissions also contribute to global warming: particulates known as 'black carbon' and ozone produced in the atmosphere (*not* ozone in the stratosphere, which forms a protective shield from the sun's ultraviolet rays). Black carbon is a byproduct of incomplete combustion from diesel vehicles and ships, poorly maintained car engines, forest fires, and burning of organic fuels or coal by factories and households. More than three-fourths comes from developing countries because of cook-stoves, old diesel engines, and open pit fires.

Black carbon is estimated to be the second or third-largest contributor to global warming. The two main efforts to reduce black carbon employ cleaner-burning cookstoves in China, India, and other developing countries, and diesel particle filters in Europe and United States.

Ground-level ozone is a potent GHG formed by emissions from industrial processes and fossil fuels used in transportation. Ozone precursors—carbon monoxide, nitrogen oxides, methane, and other hydrocarbons—come mainly from the burning of fossil fuels, wood, and biomass. Jessica Seldon Wallace, director of a development center in Chennai, India, and climate

scientist Veerabhadran Ramanathan at the University of California, San Diego, advise immediate steps to reduce black carbon and ozone precursors.

Water vapor is the most abundant greenhouse gas but scientists believe that humans don't have much effect on this. The air can hold only a limited amount of water vapor before it condenses into raindrops. However, there is a feedback effect: warmer air can hold more moisture, which in turn enhances climate change.

These are major energy users/global warming polluters:

- Coal-based electricity for residential, commercial, and industrial purposes (40% of U.S. CO_2 emissions)
- Animal agribusiness especially cattle (18% GHG world-wide)
- Deforestation (20-25% CO_2 world-wide)
- Petroleum-based vehicles for transport (33% of U.S. CO_2)
- Heat for residential, commercial, and industrial purposes
- Production and consumption of consumer goods
- Military consumption of oil and production of various industrial pollutants

Coal: The Union of Concerned Scientists states that coal-burning power plants are currently the single largest source of America's global warming pollution. Burning coal especially in older power plants emits brain-damaging mercury emissions. Coal-mining pollutes drinking water, mutilates mining areas such as the Appalachians, and is a very dangerous occupation. About half of U.S. electricity is currently provided by coal.

U.S. electric utilities had plans to build more than 150 new coal-fired power plants, most of which would use the old 'pulverized coal' technology. Only a small fraction of them would use the new, cleaner coal gasification process (IGCC), because it is more expensive. When utilities announced plans for new coal-burners, local environmentalists immediately began protests and have been remarkably successful in stopping them. The national association of state Public Interest Research Groups (PIRG) says that the same $137 billion dollars planned for coal-fired power plants if applied instead to energy conservation would reduce energy demand by 19% percent in 2025—then we would not need the new plants.

Animal Agribusiness

The livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global.
~UN Food and Agriculture Organization

A 2006 report from the UN Food and Agriculture Organization (FAO) says the livestock sector generates even more greenhouse gases than cars do (18% compared to 13%). The EPA estimates that manure and belches from 170 million cattle, sheep, and pigs produces about one-fourth of methane released in the United States. As a greenhouse gas, methane is about 72 times more potent than CO_2. Besides methane, animal-raising produces 65% of human-related nitrous oxide, which has almost 300 times the Global Warming Potential (GWP) of CO_2. Most of this nitrous oxide is from manure. Livestock production is also the major cause of deforestation in Latin America, where rainforest is cleared either for grazing or to grow vast plantations of genetically-modified soya for Europe's livestock farming. Trees sequester carbon, so their death releases CO_2 into the atmosphere.

With increasing prosperity the world's better-off populations are consuming more and more meat and dairy products. Livestock now use 70 percent of all agricultural land, mainly as permanent pasture, but also for growing feed. One-third of the planet's arable land is used to produce livestock feed, leaving two-thirds of cropland to grow food directly for humans. Large herds degrade land, pollute water, and contribute to loss of biodiversity. Constant refrigeration of meat from slaughterhouse to the customer's table also uses a lot of energy. The FAO report suggests a number of remedies to reduce the land degradation, overuse of water, and global warming emissions caused by livestock farming. These remedies include soil conservation methods, feeding animals more natural diets to reduce fermentation and methane emissions, moving away from intensive confinement systems, setting up biogas plants to recycle manure, improving the efficiency of irrigation systems, full-cost pricing for water, and so on. Many of these would require incentives and disincentives on the national level.

The FAO stops short of recommending that people in the wealthy world voluntarily reduce their consumption of meat, especially beef—but this action would have a large effect on emissions, and also on health, because animal fat is implicated in heart disease and other illness. Other protein sources are available, often combining beans (or nuts, or soy foods such as tofu or tempeh) with grains to make a complete protein. Frances Moore Lappe popularized this idea in her best-selling 1971 book, *Diet for a Small Planet*. Protein combinations such as beans and corn, or rice and soy foods are the staples of traditional diets throughout the world.

Some say that the problem comes from industrial agriculture, not from smallholders who raise animals more sustainably for their own families or a small local market. Biodynamic farming and Permaculture specifically integrate animals into their farming ecosystems. Dairy cows emit less methane when fed a greener diet than corn or soy. Animals on grasslands that are managed with good grazing practices do not ruin the land or contribute to deforestation that leads to global warming. However Gene Sager, Professor of Environmental Ethics, warns that simply buying beef that is advertised as grass-fed does not ensure it is organic, or that animals were raised sustainably or treated humanely.

While some people may take this opportunity to become vegetarian or vegan (no animal foods including eggs or milk), a more realistic goal for most is semi-vegetarianism. Widespread conversion to a semi-vegetarian diet is one of the most significant ways that individuals can affect global warming by lifestyle changes. Our 19th century ancestors in the United States didn't eat meat every day—chicken every Sunday was the rule. Today Americans eat the most meat of any country, about 220 pounds a year. You could start out with 'Meatless Mondays.' If you eat meat twice a day, try eating it for only one meal. If you eat meat once a day, try reducing this to two or three times a week. It is best for you and the planet if this meat (and other animal food) is raised in a more natural way and on a smaller, sustainable scale.

Do-able, Not Painless: Global warming is a threat unlike any other that humans have faced, and we cannot avert it by spotty personal measures, although every positive action does add up. In fact, GW can no longer be averted—but the worst possibilities can be, if we act in time. The world needs to set a hard cap on global warming emissions of all kinds and spell out a timetable for their reduction. It is not enough for the world to freeze emissions; they must be reduced by half or more in just a few decades.

The world's record of climate agreements is not inspiring. The Kyoto Protocol was drawn up in 1997 and committed industrialized nations to reducing greenhouse gases by about 5.2% over their 1990 levels during the following decade. Later negotiations extended the reductions to

2012. The treaty entered into force in 2005 and by September 2011, 191 nations had signed and ratified it. The United States is the only signatory that has not ratified the protocol. Canada withdrew from it in December, 2011. The Copenhagen summit in 2009 produced a very weak agreement. Two years later, the Durban agreement in early December 2011 made commitments that would not take effect soon enough, while being unfair to the developing countries which are not responsible for most of the emissions. However, it was a beginning. Tosi Mpanu-Mpanu, head of the Africa Group, said "Of course we are not completely happy about the outcome, it lacks balance, but we believe it is starting to go into the right direction."

Developed countries were clearly the foot-draggers. Murray Worthy of the World Development Movement said the talks were held hostage by the EU, but according to the UK *Guardian*, the United States was the "winner" at Durban:

> Despite arriving in Durban with nothing to put on the table beyond what had been pledged two years ago in Copenhagen, America secured all its key objectives. The prospect of stronger action on emissions in the years ahead was minimized, ensuring no new, deeper targets would take effect before 2020. The US kept any decisions on new sources of climate finance for developing countries off the table, and insisted any future agreement treat developed and developing countries equally.

Such self-serving, short-term attitudes must change, and quickly, or we will all be swimming with the polar bears.

According to the National Resources Defense Council (NRDC), a consensus of scientists in 2007 was that the USA needs to reduce greenhouse emissions 25% by 2020 and 80% by 2050. Of course, it would have been better if we had started after the OPEC oil crisis in 1974, when the far-sighted recognized one or more of the related problems: U.S. dependence on petroleum imports from unstable countries, Peak Oil, and global warming. It was a time of creative innovation in solar technologies. Some people went off the grid and began to change their lifestyles then. But are most of us ready even now?

British journalist George Monbiot, in his recent book *Heat: How to Stop the Planet from Burning*, asks this question: Does the responsibility of the world's largest polluters differ from that of less-polluting countries? The average American still generates over ten times more greenhouse gases than the average Chinese, thirty times more than a person in Bangladesh. Monbiot answers that since everybody on earth shares the biosphere, each should have equal use of the planet's capacity to absorb and cleanse our pollution. So, he says, let there be *a global carbon emissions cap* meted out on an equal basis to all persons. Stephan Harding at the UK's Schumacher College agrees and adds that our goal is to reach a global steady-state economy in which living standards in the less developed south would grow while those of the north decline "until both converge on a steady and equitable per capita share of whatever benefits the Earth can spare us." In other words, let us find a species solution.

Personal Carbon Trading: The personal Tradable Energy Quota (TEQ) is a system for rationing the use of fossil fuels to reach carbon equality on the national level. David Fleming, who devised this plan, says any government in the developed world could be the first to adopt the TEQ system which he describes as follows:

> TEQs include every energy user and every energy provider in the national economy. They are measured in units, and every adult is given an equal annual allocation. Industry and government bid for their units at a weekly tender. Units can be traded. Anyone who uses less than their entitlement

can sell their surplus, and anyone can buy more units if they need them. The total number of TEQs available is set out in a TEQs budget (by an independent Energy Policy Committee) that looks 20 years ahead. The size of the budget goes down week by week, step by step like a staircase….The final amount of energy available to the nation…is set at a level low enough to ensure that the economy does as little harm to the natural world as possible while ensuring that citizens enjoy a simple but comfortable standard of living.

Fleming adds that any nation that adopted TEQs would enjoy a great competitive advantage in the rapidly-increasing international market for energy-efficient products, and that the first to do so would likely trigger a domino effect. In 2008 the UK Department for Environment, Food and Rural Affairs (DEFRA) completed a pre-feasibility study of TEQs, concluding that "personal carbon trading has potential to engage individuals in taking action to combat climate change, but is essentially ahead of its time and expected costs for implementation are high." DEFRA planned to monitor research on TEQs and to consider introducing them at a later stage.

Besides TEQs, other proposals for personal carbon trading include Personal Carbon Allowances (PCAs) as described by Mayer Hillman and Tina Fawcett in the book *How We Can Save the Planet*. Researchers are working on PCA schemes at the Environmental Change Institute at Oxford, UK. Still another plan is the Tradable Personal Pollution Allowance, which can apply to any form of pollution, not just carbon dioxide. It was proposed in an article by Dr. Kirk Barrett in 1995. What is generally called Carbon Trading is something very different from what is proposed by Fleming, Monbiot, and others. We will look at that in a bit.

Some readers may stumble over the statement above that living standards in the richest nations must decline. However, consider that the term 'living standards' actually includes a lot of waste, inefficiency, and over-consumption of doodads. Are we in the United States really so much better off than those in Australia or Italy who earn an average income $10,000 less than ours? Are we so much better off than our parents or grandparents in 1938 or 1948? Actual living standards—health and happiness—might improve while we consume less fossil fuel energy.

I once asked my mother what modern invention had improved her life the most. Born in 1910, horse and buggy days, she had lived to travel by airplane and watch television. I thought Mother might choose the auto (she loved to drive). But her favorite invention was the electric refrigerator because she did not have to lift, balance, and empty the heavy pan that collected ice-melt at the bottom of the old-fashioned icebox. Your own choice might surprise you. We favored ones who live in rich countries still like to go camping or to take trips in countries that lack some of the conveniences we're used to.

The idea of biospheric equity is disturbing and little mentioned in the U.S., says David Morris of the Institute for Local Self-Reliance, because it would require so much of Americans:

Currently, global [greenhouse gas] emissions are [roughly] 1 ton per person. But the average American generates, directly and indirectly, some 10 tons per capita. Thus, to save the planet and [make up for over-consumption of resources] *Americans must go far beyond freezing greenhouse gas emissions. As a nation, we must reduce them by more than 90%.* [My emphasis]

Note that this does not mean that each household reduces heat and electricity by 90%. Lifestyle changes *are* necessary but most carbon savings would come through increased industrial efficiency, a different transportation system, electricity based on wind and solar energy, and other broad transformations. Monbiot's book details changes needed for the UK to achieve sufficient reductions in greenhouse gas emissions, ideas which could apply equally well

to the United States and other countries. For instance, Monbiot points out that a great deal of energy is consumed in individual shopping trips. He proposes delivering most goods, and cites research that shows delivery vehicles could reduce traffic by at least 70%.

The Bottom Line

The system we have today is the product of over a hundred years of investments, and the next one will require a hundred years of investments.
~David O'Reilly, CEO of Chevron

Conservative opposition to signing the Kyoto Protocol, or even to acknowledging human responsibility for global warming, was part of the frame that change would be an economic nightmare for the suppliers and addicts of black gold (oil) and compressed peat bogs (coal). In this view, economics is not only the most important consideration of all, but we must protect existing industries and their networks. On the other hand, some view the prospect of energy innovations as a challenge and an economic opportunity.

Consider that people used other forms of energy long before they discovered oil 150 years ago or made an industrial revolution from coal 200 years ago. In my own childhood, people lived in the USA without great hardship while using a fraction of the petroleum energy. We didn't know about the plastics and pesticides we were missing. Surely now, with all our accumulated technical knowledge, we can change again. The point is that *we have to*. In order to prevent the worst possibilities of climate change, the world needs a rapid changeover to renewable energy sources and energy efficiency, away from fossil fuels and also from nuclear power which besides its own dangers requires fossil fuels to set up and operate. Phasing out petroleum and coal, along with some other changes need not ruin the economy—but it will give it a spin.

O'Reilly says that to change over to clean energy, one must be realistic about the scale of demand, the scale of investment—trillions, he says—and the time needed to produce alternatives. Whether or not O'Reilly is correct, we simply don't have time for 100 years of investments. Furthermore, any unexpected breakthrough would render it obsolete.

We must also recognize that from the Bottom Line mentality of big oil producers, the less oil that exists the higher the price, and the more profit they get from selling it to the highest bidder. They plan to make money until this resource totally runs out. Consequently, producers are not terribly interested in replacing petroleum with more sustainable energy sources, nor are they worried about social problems and wars unless these get so out of hand that they threaten profits. From the time of the '70s oil crisis and President Jimmy Carter's attempts to introduce some first steps toward energy conservation, energy producers carried on a concerted propaganda campaign to belittle Carter, the very idea of energy conservation, solar energy—equated with only photovoltaic electricity—and most of all, the growing evidence for climate change.

People would hear much more about energy alternatives except for the fact that many forms of renewable energy lend themselves to small-scale, decentralized use that threatens current energy producers. We are still not hearing some of the missing information that political leaders and mainstream media did not mention for 30 years. For instance, electric cars are a viable technology and so is wind-powered electricity to fuel them. The first megawatt wind turbine was built in 1941—40 years before the second one was built. A recent Stanford study shows that North America has more sites suitable for modern wind turbines than any other continent. The Great Plains, Alaska, Sandberg in California's Mojave Desert, and Mount Washington in New

Hampshire are among the windiest places. Also, air speeds over water are two times faster than over land, making off-shore wind turbines another option, well-placed to serve coastal cities.

Solar technology is hardly new and untried. Solar water heaters have been in use for over a century. The ancient Greeks knew about heating houses by passive solar, and for more than fifty years, modern architects have further developed such techniques. A number of possible new solar technologies have existed since the nineteenth century. For example, a patent was awarded for the first sun-powered motor in France in 1861, and modern materials and technologies greatly expand the possibilities. We can expect many more inventions and improvements, but mainly we need the will to adapt.

A Subtle Bias: Scientists and other experts trying to develop policies to combat the climate problem often seem limited in their thinking by the economic-technological status quo. Let me illustrate this from the otherwise notable and very helpful work of Robert Socolow, an engineering professor at Princeton, and Stephen Pacala, an ecology professor at Princeton, who together lead the Carbon Mitigation Initiative to design realistic solutions for the climate problem. Socolow and Pacala gave early warning of the grave dangers if humanity allowed CO_2 emissions to double. They have devised a pie chart with fifteen different wedges, each representing technologies or conservation aims which could diminish carbon emissions significantly. Each wedge-plan could avoid releasing 25 billion tons of carbon.

The deployment of any eight of these 15 plans on a grand scale, starting now, could in Friedman's words "generate enough clean power, conservation, and energy efficiency to grow the world economy and still avoid the doubling of CO_2 in the atmosphere by mid-century." So Socolow and Pacala have provided us with both a target and 15 measured strategies for how to reach it. This is a great step forward in visualizing and understanding the scale of the problem.

The difficulty lies in the nature of the wedges they provide, some of them quite unthinkable, such as "Drive two billion cars on ethanol, using one-sixth of the world's cropland to grow the needed corn." Surely humans could give up two billion cars sooner than giving up one-sixth of our cropland to feed cars rather than humans, a plan that would certainly lead to famine. Three of the wedges involve carbon capture and sequestration, which does not seem to meet the two scientists' stated qualification that a technology be capable of large-scale deployment today. Another wedge would add twice today's current global nuclear capacity in order to replace electricity based on coal. But elsewhere Friedman quotes energy expert Nate Lewis (California Institute of Technology) who says to get all our electricity from nuclear power between now and 2050 we would need to build 13,000 new nuclear reactors. That is something like 30 times today's 436 reactors, one a day for 36 years. Such a major expansion would require breeder reactors, because there is certainly not enough uranium to fuel them.

Other wedges seem doable, such as "Double fuel efficiency of two billion cars from 30 miles per gallon to 60 mpg" and "Cut electricity use in homes, offices, and stores by 25 percent." Another one is "Halt all cutting and burning of forests," a fine goal for several reasons, if it allows for a modest amount of sustainable harvesting. "Increase wind power fortyfold to displace all coal-fired power" sounds like something else we could do, as wind-power is increasing by leaps and bounds. "Increase solar power seven-hundred-fold to displace all coal-fired power" might seem difficult, but advances such as California's Million Solar Roofs Plan can help create a large, stable solar market to reduce costs of components and installation.

Prof. Pacala says "There has never been a deliberate industrial project in history as big as this. We have to get rid of 200 billion tons of carbon over the next fifty years—and still keep growing." But is "industrial project" the right frame? One-third of listed options would directly

improve coal-fired electric plants and one-fifth would improve the efficiency of cars or reduce miles driven by today's inefficient cars, as if we are stuck with those particular technologies. One needs also to look deeper into the slippery concepts of 'demand' and 'growth.' It's quite possible we don't have to keep growing after all. (See Tim Jackson, *Prosperity without Growth.*)

Other Ways to Cut the Pie: Because of the urgent need to reduce CO_2 scientists may overlook supplementary strategies to reduce black carbon and ozone. A recent study by the Clean Air Task Force estimated that retrofitting one million semitrailer trucks with diesel particulate filters would yield the same climate benefits as taking 5.7 million cars off the road. In developing countries, solar-powered stoves and updated designs for biomass-burning stoves and kilns can reduce the burning of biomass, which Wallace and Ramanathan say causes two-thirds of black carbon emissions. They conclude: "Of the available strategies, focusing on reducing emissions of black carbon and ozone precursors is the low-hanging fruit: the costs are relatively low, the implementation is feasible, and the benefits would be numerous and immediate."

Wallace and Ramanathan emphasize that this strategy would buy us a little time but is no substitute for CO_2 reduction. They add that black carbon and ozone could be part of agreements in ongoing bilateral discussions such as U.S.-China cooperation and the India-EU Dialogue.

Going back to the Carbon Mitigation Initiative, perhaps the following alternatives (if they were calculated) would rate wedges of their own: 1) Build all new housing and buildings either underground or to the German Passive Standard; 2) Replace most passenger air travel and most truck cargo transport with rail, river and canal barges, and wind-assisted ships; 3) Accelerate development of Radical Transparency with the probable effect that consumers choose cleaner and less energy-intensive products; 4) Cut the acres devoted to livestock agriculture and promote vegetarianism, reducing not CO_2 but methane and nitrous oxide emissions with their greater GWP; and 5) Fully apply current emissions-control technologies on transportation world-wide.

In another alternative, a recent issue of *Sierra* magazine proposes nine wedges of CO^2, each representing 25 billion tons over 50 years that we can keep out of the atmosphere. One wedge depends on the practice of conservation tillage. Another would stabilize population growth in five ways: Get access to modern contraception to the estimated 215 million women worldwide who want them; educate women; provide comprehensive sex education to help limit teen pregnancy in both developed and less developed nations; empower women economically and politically [this might include microfinance]; and support PHE, a tropical development approach that combines better access to health services with sustainable use of resources.

Electricity

[The United States needs nuclear power] if we plan to meet the electricity demands that we're going to have in the near future, and that's a 40% increase in electricity demands over the next 20 years.
                    ~Scott Peterson, spokesperson for Nuclear Energy Institute, 2004

When you hear statistics about how we will need so much more electricity in the near future, *look beyond that frame*. It is not that we need electricity itself, but that we need (or want) what electricity can do. In many cases, solar architecture, conservation, and technical fixes can provide what we need without any increase in electricity production. For instance, skylights and solar tubes can reduce the need to use electricity for daytime lighting. A 12-story corporate office

in Massachusetts has seven heliostats on its roof which reflect light through an open shaft so that many employees work using natural light alone. Geothermal heat pumps can greatly reduce the need for electricity for air conditioning. So could more underground buildings.

A physicist at the Lawrence Berkeley National Laboratory, Hashem Akbari, contends that if the world's 100 biggest cities converted rooftops and pavement to light, reflective colors so that buildings and surrounding concrete would absorb less heat, buildings would require far less air conditioning, and would offset huge amounts of CO_2 emissions. U.S. Energy Secretary Steven Chu took up this idea in May, 2009. Another proposal to keep cities from being heat sinks is to install urban rooftop reflectors.

According to energy expert Thomas R. Casten, utilities waste two-thirds of the fuel used to make electricity in the United States. Casten claims this energy inefficiency is because utilities are monopolies, and that more competition would save both money and fuel. Casten, who is experienced in the development and operation of energy conversions, claims that the United States and some other nations can double the efficiency of electric production, which would cut CO_2 emissions in half and reduce the consumer's price by 30 to 40 percent. Cogeneration could double the energy efficiency of power plants.

We often hear the mantra that renewables just can't do the job now done by fossil fuels, but this is from the point of view of current electricity producers. It also ignores the possibilities for small-scale, local production. Electricity can be produced not only by wind power and solar photovoltaic, but also solar thermal and concentrating solar power, geothermal power , ocean and tidal power, and other energy sources.

Electricity Paradigms One, Two, Three, Four+

If we are going to build a clean energy platform, it will be largely through the actions implemented by and through America's electric utilities. They have the customer base, the ability to raise huge volumes of cheap capital, and the installed technology infrastructure that we need to drive the development of an Energy Internet.
~Thomas L. Friedman, *Hot, Flat, and Crowded*, 2008

Highly centralized generation of electrical power is a paradigm that has outlived its usefulness. Decentralized generation could save $5 trillion in capital investment, reduce power costs by 40 percent, reduce vulnerabilities, and cut greenhouse gas emissions in half.
~Thomas R. Casten and Brennan Downes, "Critical Thinking about Energy," 2005

The world's largest industry is the electric power industry. Over the course of a century the U.S. system grew in a fragmented way, state by state (and in Europe, country by country). Thomas Friedman says the U.S. electric grid is "the dumbest big machine ever made," a patchwork of 3,200 utility companies, with surprisingly little integration between the three regional grids of Eastern, Western, and Texas. Friedman's answer is to create the 'Energy Net,' a smart transmission grid, with incentives to incorporate conservation measures and renewable energy. Casten and Downes, on the other hand, think more competition is the key.

A third approach is a growing movement that advocates 'Small Wind' or community-scale wind-power. Joe Provey, wind advocate and former editor at *Popular Mechanics*, says that there are many advantages to mid-size installations of two to 40 MW, with most around five megawatts. Such smaller projects do not require advanced transmission lines, as large utility-scale projects do. Mike Bowman, of the "25 x '25" organization, points out that 80% of the

country (geographically, not by population) is served by the rural electric system that was built in the 1930s to bring power to rural communities. Bowman says this system that's already in place is well suited to a network of small wind farms, with an estimated 50,000 MW of potential wind-power across the central Great Plains. (The "25 x '25" organization is a coalition of farmers and conservationists who want to see 25% of U.S. energy coming from renewable sources by 2025.)

Provey says interconnected mid-size wind projects in geographically diverse areas can often moderate the ups and downs of wind resources better than a single, large-scale wind farm. There are also benefits to local economies. Full development of Small Wind requires changes in regulations and tax policies that currently benefit large producers over small ones.

In a fourth plan, Europe is developing supergrids to carry electricity generated from wind turbines and concentrating solar power. DESERTEC is a large-scale, international plan to site installations in the Sahara and other deserts in Northern Africa and the Middle East and then route most of the electricity to Europe. The idea of DESERTEC was developed by a network of scientists, engineers, investors, politicians, and others across sixty countries. Besides promoting the DESERTEC concept in general, they are collaborating to join Europe, the Middle East, and North Africa in one such plan (EUMENA) with many possible side-benefits to both the general concept of CSTP and the Europe-Middle East-Africa plan. A new trans-Mediterranean partnership could improve relations among countries in the region, and seawater could be desalinized using waste heat from CSP plants.

In November, 2008 the European Commission voted to construct regional electric transmissions ('supergrids') across the North Sea, around the Baltic region, and around the Mediterranean Sea. DESERTEC plans are becoming more detailed. One political challenge is that European countries must forge new agreements and develop strategic plans to coordinate transmissions. Another is that the supergrid does not have a big role for today's conventional power plants. According to Gregor Czisch, an energy consultant in Germany, utilities are cautious because they want to protect existing investments although the public is ready for a bold new approach with European or regional planning.

This looks like three or four somewhat different paradigms: Friedman's plan would use existing utility companies and government funds to build a smart grid incorporating energy conservation and renewable energy. Casten and Downes would decentralize electricity production to smaller regions and municipalities, saving on transmission losses, while small wind projects energize many rural areas. DESERTEC would link a number of countries and two continents with supergrids to carry solar-generated power from the deserts to countries farther north. It would not necessarily use existing utility businesses. Apparently something like the DESERTEC technology would be possible also in the United States, or on the North American continent. According to the UK branch of TREC, less than one percent of the world's deserts covered with CSP plants could produce as much energy as the world uses now.

There is still a fifth possibility, the 'wild card' of a radical innovation that might make supergrids, smart grids, and even transmission lines and utility companies obsolete. If Joseph Yater's rooftop solar thermoelectric device had proved viable in the late 1970s or 1980s, it would have been such a wild card—likewise if the zero-point-energy people make a breakthrough. With four or more competing strategies, this looks like another one of those 'wicked problems' with multiple stake-holders. Yet these plans are not necessarily mutually exclusive.

Chapter 2
False Starts

This little piggy went to market.

~Nursery rhyme

We will be much better off if politics and special economic interests do not make the decisions about energy. For instance, some heavily promote bio-fuels because of economic benefits for Midwest corn growers. Some promote the hydrogen economy by linking it specifically to nuclear technology. Futurist Tsvi Bisk notes that hydrogen is essentially a carrier of energy, and so far takes almost as much energy to produce as it carries.

We will face false choices and foot-dragging. Politicians will look for quick fixes that don't cost too much and don't disrupt powerful sectors of the economy. Politicians and polluting industries will talk the talk without walking the walk, promoting half-measures, to forestall the radical changes we actually need. But half-measures will not rescue us. Dr. Martin Hoffert, NYU physicist, wrote in *Nature*: "The most unrealistic approach may be to base climate change mitigation policy on more efficient versions of today's technology….Let's not lose the game from a failure of imagination."

The species view will take us farther than a narrow nationalism. For instance, we note that China, dependent on coal, and with a billion people, already surpasses the U.S. as the world's biggest emitter of greenhouse gases. Some models predict China alone will be producing half of current worldwide carbon emissions by 2030. China is working on improved coal-burning and carbon capture, large reforestation projects, and renewable energy. But the United States has its own responsibilities. A survey of 19 countries shows that the Chinese public puts almost twice as high a priority on addressing climate change as Americans do. (The USA ranked at the bottom.) Now the two countries are collaborating on improving their carbon footprints. Any countries that are not part of the solution will become pariahs, because they (we?) threaten the whole species.

Information and debates often have a missing element. Statistics about the use of fossil fuels and nuclear power often omit the extra energy requirements for extracting, transporting, processing, and distributing fuels. These extra costs, called the *energy trajectory,* add a lot of fossil fuel energy to the total and conversely, can also be targets for greater efficiency.

Also we need to rethink the perverse incentives that are built into government subsidies and taxes. For instance, Brad Lemly says a 1988 study by the International Center for Technology Assessment showed that conventional gasoline, if unsubsidized, would cost consumers $15 a gallon. That cost would surely be even greater today. Fossil fuels and nuclear electricity still get far more subsidies and tax-breaks than do the renewable technologies that we need. For instance, at this writing, rules issued by the previous Bush Administration could allow the leasing of millions of acres in the Rocky Mountain States for commercial oil shale development, although it is probably the dirtiest fossil fuel of all. This project would use huge amounts of water, stressing the water resources of the arid West, and would require ten new coal-fired power plants just to provide energy for extracting and processing. Yet oil companies would pay less than half the royalties they ordinarily pay on profits from oil and gas drilling leases.

Let's not try to find one, dramatic answer, a quick fix that is more likely to stress the environment or create other problems. That which works on the small scale, as part of the mix, is likely to be unsustainable if billions use it (biodiesel and wood heat are examples.) We need not limit ourselves to centralized options, although we will hear much more about them because they

lend themselves to existing industries such as electricity producers. Centralized options by their nature tend to lose a lot of energy efficiency over long distances spanned by wires, tankers, pipelines, or delivery trucks. They are more susceptible to blackouts and security threats.

Now let us consider five problematic proposals to get us away from using oil and coal, or to reduce the harm done by burning coal. These are: nuclear electricity, bio-fuels, the hydrogen economy, 'clean coal,' and carbon storage. In each case there are major drawbacks that indicate that we should not rely on them as solutions. To these we add a collection of last-ditch techno-fixes which together are called "Plan B." Lastly we look at the controversies surrounding carbon trading. It is proposed by the United States and other industrialized countries as a political compromise that can use market mechanisms to reduce greenhouse emissions with the least negative impact on the economy as a whole.

Nuclear Electricity: This industry began in 1954 in the USSR. As of June 2012, 31 countries operate 436 reactors for electricity generation, and 44 more plants are under construction. Across the world there are eleven reactors that have been under construction for over 20 years. Seventeen nuclear power plants (NPPs) have already been decommissioned, and 119 have been shut down mainly because of earthquakes, design flaws, or the need for major repairs. The United States has the most NPPs in operation (104), followed by France, Japan, and Russia.

Nuclear energy produces one-sixth of the world's electricity and some countries are heavily dependent on it. About three-fourths of France's electricity is nuclear and 40% of Slovenia's. Christian Parenti says that Japan and France heavily subsidize their nuclear plants, use a single design, and built them "to ensure some minimum strategic energy independence and, for France, to build an atomic arsenal." Although the United States has the most reactors, these provide only about 20% of its electricity and many old reactors are still running decades beyond their intended life-span. No new NPPs have been ordered in this country since 1973, although 22 nuclear plants made application during the nuclear-friendly Bush administration. However, in February 2012 the NRC (with the dissenting vote of its chairman) approved the building of two new nuclear reactors in Georgia.

A PBS Frontline program "Nuclear Aftershocks" says that the five most pro-nuclear energy nations are China, France, India, Russia, and the United States. Coincidentally, substituting UK for India, these are the five countries with the most nuclear warheads. With the same substitution, these are the five permanent members of the UN Security Council.

One serious problem with nuclear energy is that many countries develop nuclear power and nuclear weapons together, and they can hide what they are doing. Uranium enrichment plants and reprocessed plutonium waste can be used to make uranium or plutonium fission bombs. This is, of course, the current political issue between the western powers and Iran.

Nuclear power, touted for being inexpensive, would not be competitive against some other forms of electricity without its many hidden subsidies including government protection against terrorist attack, costs of decommissioning, and the storing and guarding of nuclear wastes for thousands of years. Futurist Tsvi Bisk says, "In the United States, the nuclear industry has been so legally advantaged in terms of liability that one wonders how it has withstood a real constitutional challenge. France's protection of nuclear power is even more extreme." The U.S. Price-Anderson Act limits the U.S. industry's liability in case of a catastrophic accident to $9.1 billion, while guaranteeing up to $600 billion from taxpayers. A host of other subsidies are listed by Evan Ringquist, professor at Indiana University Bloomington:

Congress created a $20 billion loan guarantee program for constructing new nuclear power plants; a $2 billion subsidy for developing uranium enrichment facilities in the United States; $2 billion risk insurance for nuclear power plants facing delays due to regulations or public opposition; a $1.3 billion subsidy for decommissioning older nuclear power plants; $1.2 billion in reactor research; a $0.018 per kilowatt hour subsidy for electricity produced by new nuclear power plants….These subsidies are essential, since every credible analysis concludes that nuclear power is not cost-competitive compared with electricity from coal, natural gas, and in many cases, wind.

Nuclear electricity has been an expensive boondoggle for other nations as well. In the UK, a controversial nuclear recycling facility known as the Mox plant has already cost British taxpayers more than a billion pounds since it began in 2001, although without producing much of anything. Mox was supposed to reprocess used uranium and plutonium, transporting the weapons-grade material to customers world-wide. This plan in itself carried definite risks both for world safety (terrorists and proliferation) and the environment (especially ocean transport), but the unproven technology did not pan out nor did a market materialize. The Liberal Democrats were out of power when the Mox plant was approved and built, and Simon Hughes, their climate change spokesperson said it was a "prime example of [the Labor Party's] misguided and hugely expensive continuing love affair with nuclear power. Building a new generation of nuclear power stations is throwing billions of good money after bad. They are never built on time or on budget and they will not solve the UK's energy needs."

While it is too expensive to build reactors in the West without heavy subsidies, this is less true in India and China with their cheap labor. China plans to build 30 new reactors by 2020.

Some advocate nuclear electricity claiming it produces clean energy that does not contribute to global warming. However, fossil fuels are required for uranium mining and enrichment, construction of reactors, decommissioning, transportation of fuel and wastes, and other aspects of nuclear set up and operation. It is also not 'clean' in the sense that radioactive pollution is involved in its mining and waste disposal. While most major environmental organizations oppose nuclear power, some environmentalists are desperate enough about climate change that they will consider it, especially new and improved designs such as pebble-bed reactors (PBRs) which are cheaper to build, supposedly meltdown-proof, and could produce hydrogen.

Mycle Schneider in the *Bulletin of the Atomic Scientists* states that three major problems confront any possible replacement of the world's aging nuclear fleet or an expansion of nuclear reactors. First, there is limited industrial capacity, as many companies have gone out of this business. For instance, only one steel plant in the world, located in Japan, can manufacture the 450-ton ingots required by generation III type reactors. There is also a shortage of skilled workers both in the United States and European nuclear countries. Second, financial markets are skeptical about nuclear power's future. Standard and Poor, Moody's, and even the Nuclear Energy Institute have showed pessimism about a revival of the nuclear sector. Parenti notes that Warren Buffett scrapped plans to build a nuclear plant because it wasn't economically sensible.

Third is the waste problem. Lester R. Brown of the Earth Policy Institute notes that the proposed Yucca Mountain nuclear waste repository (now cancelled) was billions over budget and almost 20 years behind schedule. It also would not hold all the waste produced in U.S. reactors. There are currently four deep geologic repositories operating in the world, two in Finland, one in Sweden, and one in the USA—the Waste Isolation Pilot Plant (WIPP) in New Mexico near Carlsbad. WIPP is restricted by Congress to transuranic (relatively low level) waste. None of the repositories currently in operation receive high level waste, the most radioactive

products of nuclear reactors that require isolation for thousands of years. Worldwide, high level waste is increasing by about 12,000 metric tons every year. A 1000-megawatt nuclear power plant produces about 27 metric tons of spent nuclear fuel (unreprocessed) every year.

A recent report by environmental economist David Fleming says at current levels of using uranium ore deposits, in less than three decades the nuclear industry must divert all its energy to cleaning up its own waste. If it tried to delay that clean-up, it would end up using more fossil fuel than it saved. Fleming said, "I conclude that nuclear energy is not part of the solution to climate change and energy security. It is part of the problem."

There are also concerns about uranium supplies. The United States imports 90 percent of its uranium. Half of it comes from decommissioned Soviet weapons, but this plan will end in 2013. The International Energy Agency reports that by 2020, growth in the number of nuclear reactors is likely to outstrip supplies of fuel from existing, planned, and prospective uranium production facilities. This means that to produce more fuel, the industry would have to build breeder reactors. Through a complicated, expensive process, breeders produce plutonium, a highly toxic and radioactive substance that can be used in making bombs, so that such plants require much greater security. The coolant used in breeders is liquid sodium, which is extremely flammable so that for safety's sake an extra cooling loop is required, adding to the expense. Nevertheless, a new generation of breeder reactors is being built in China, India, and Russia.

In 2010 President Obama announced a loan guarantee (essentially a taxpayer loan) of $8.3 billion for two new reactors in Georgia, with other nuclear projects planned in South Carolina, Maryland, and Texas. A total of $54 billion was in the 2011 budget for nuclear loan guarantees. Critics such as journalist Harvey Wasserman, and the Nuclear Information and Resource Source (NIRS) noted the following problems, among others: The proposed reactor design (Westinghouse AP-1000) was rejected by the Nuclear Regulatory Commission as liable to damage from hurricanes, tornadoes, and earthquakes. The Congressional Budget Office has warned that at least 50% of reactor projects receiving government construction loans are likely to default on the loan. The plan did not allow for cost overruns, which are very common. Several aspects of the loan process were not at all transparent.

Meanwhile, energy experts such as Amory Lovins claim that each dollar invested in energy efficiency would save up to seven times the energy and create 10 times as many permanent jobs as a dollar invested in nuclear energy. It will also displace far more CO_2. Lovins says that nuclear technology is already obsolete, because it has so many competitors such as end-use efficiency and wind power. Another drawback is the long construction time required to get a nuclear reactor online, compared with relatively fast commercialization of renewable technologies and energy efficiency policies and devices.

Just a Few Glitches

[Nuclear power] may not be an "appropriate" technology for an underdeveloped nation with an unstable government, a shortage of trained engineers, an absence of any power grid to distribute the electricity generated, and a megalomaniacal ruler anxious to acquire fissionable material with which to construct nuclear weapons.
~Al Gore, former U.S. vice president and renewable energy advocate

Gore could have added unstable geological formations to his list. The nuclear industry, unable to build new reactors in the United States for a number of years, has already sold many to nations that sited them near active volcanoes or known earthquake faults. Such risky siting also occurs in developed nations such as Japan and the United States. Malcolm Fraser, former PM of

Australia, points out one of several major flaws in the widespread use of nuclear power: "No nuclear reactors are designed to withstand an earthquake of magnitude 8.0. Yet there were 11 earthquakes greater than 8.5 last century and, only 11 years into this century, there have been five. Almost all were followed by tsunamis." Japan is especially at risk from both earthquakes and tsunamis, but many other nations are also vulnerable, including the United States.

European researchers found a total of 74 nuclear reactors, most in east and Southeast Asia, that are in zones at risk from tsunamis.

Nuclear power is a 'zero tolerance' technology operated for a profit by 21st century human beings who are prone to cut corners, make careless mistakes, and overestimate their abilities (hubris). Here are just two examples: At least 27 U.S. nuclear sites leak potentially dangerous levels of radioactive tritium into the groundwater. Officials at Entergy Corp. recently admitted they misled state regulators by saying the Vermont Yankee reactor did not have the kind of underground pipes that could leak tritium. One of the Top 25 Censored Stories for 2009 is that radioactive materials from U.S. nuclear weapons production are being dumped into regular landfills and are also available for recycling and resale. Some are reused in the production of items like zippers, toys, furniture, and autos, or for building roads, schools, and playgrounds.

There have now been three large-scale nuclear accidents. Officials managed to downplay Three-Mile Island, which saw a meltdown of almost half the uranium fuel in Unit 2 reactor in March, 1979. Following the accident, Gordon MacLeod—medical doctor, engineer, and Pennsylvania State Secretary of Health—urged evacuation of the most radiation-sensitive groups such as pregnant women and young children, but Governor Richard Thornburgh was reluctant to do this, on advice from other, pro-nuclear experts. Thornburgh eventually fired MacLeod, apparently for continuing to raise too many questions.

Dr. Ernest Sternglass, a physicist from the University of Pittsburgh, investigated rates of infant deaths not only in the immediate TMI vicinity but also areas affected by the plumes of wind that carried radioactive substances. His findings of an excess of infant deaths became the subject of great controversy and his methods criticized by some of the same experts.

Four days after the accident, a health physics technician named Randall Thompson went into the plant and spent 28 days monitoring the uncontrolled releases of radiation. Thirty years later, his version of what he witnessed finally became public. Thompson says "What happened at TMI was a whole lot worse than what has been reported—hundreds of times worse." His story, Sternglass's findings, and other scientific evidence suggest that the official government story— that there was no threat to the public—was a cover-up.

The second, far worse accident was at Chernobyl in the Ukraine in 1986. An explosion and fire at the reactor spread radioactive contamination across western Russia and Europe. The Chernobyl disaster is still deeply affecting local environment and public health. Estimates of the death toll vary greatly from the official Soviet figure of 31 to a Greenpeace report of 200,000. A study by Russian scientists estimates that from 1986-2004, the world had almost a million premature deaths from cancers caused by Chernobyl's radiation releases.

The most recent and far-reaching nuclear accident was Fukushima, the worst industrial accident our world has seen so far. Fukushima's airborne emissions of cesium-137 and other radioactive substances have already dwarfed Chernobyl and other nuclear explosions including Hiroshima and Nagasaki. Although Fukushima was set in motion by a natural disaster, this was an accident that could have been foreseen. The electric utility running these reactors was cutting corners, as businesses are prone to do—and cutting corners doesn't work with a zero-tolerance technology. Another risk at Fukushima was—and is—the design of its reactors.

The GE Mark I reactor used at Fukushima and in many other countries has a most amazing design flaw: its waste storage pools are suspended 100 feet in the air. Unit 4 at Fukushima still has over 1500 highly radioactive fuel rods hanging in the air, waiting for the next earthquake for them to come crashing down. This could result in an international radiation catastrophe much greater than any seen so far ("Chernobyl on steroids"). There is no easy or inexpensive way to take down these fuel rods and no approved repository to take them to. The necessary cranes and other equipment were destroyed during the disaster, and to put the waste into dry cask storage is very expensive. (That is why the nuclear industry is not using dry cask storage.)

U.S. Senator Ron Wyden says that Unit 4 is a national security issue for the United States. Robert Alvarez, a nuclear waste expert, proposes the international community get involved and help the Japanese government to get the fuel rods into dry casks as quickly as possible. +++

Harvey Wasserman, citing *Devil's Tango* by Cecile Pineda, says:

Fukushima was built despite volumes of whistleblower testimony underscoring its fatal flaws. But after agreeing with proof that the GE designs were patently insane, NRC Chair Joseph Hendrie approved them anyway because doing otherwise would have killed the nuclear industry.

The United States has 23 Mark I and eight Mark II boiling water reactors including those at high risk of earthquakes at Indian Point, Diablo Canyon, and San Onofre. Indian Point was 10 minutes away from the flight path of the aircraft that crashed in Pennsylvania on September 11, 2001. Twenty million people live within a 50-mile radius of that power plant.

German scientists at the Max Planck Institute have completed a study that predicts nuclear reactor meltdowns like those at Chernobyl and Fukushima could occur every 10 to 20 years—or 200 times more frequently than previously assumed. They also said people in Western Europe were in the most danger of being affected by radioactive contamination from such accidents, because there are so many nuclear power plants at the borders between France, Belgium, and Germany. According to a map of nuclear reactor sites, the eastern third of the United States is also one of the most dangerous areas. Professor Jos Lelieveld, leader of the research and director of the Max Planck Institute, said "In light of our findings I believe an internationally-coordinated phasing out of nuclear energy should also be considered." +++

Post-Fukushima

Basically whatever can go wrong has gone wrong.
~John Price, British Nuclear & Safety Expert, after Fukushima nuclear accident

After Fukushima, the International Atomic Energy Agency put out an action plan to enhance nuclear safety world-wide. However, the IAEA plan was only voluntary. Political leaders have been forced to rethink their policies about nuclear energy, with many countries phasing it out.

The Japanese distrust of nuclear power appears to be growing. Pew polls in June 2012 showed 70% of the public now wants reduced dependence on this energy source. There were strong public protests (200,000 protestors in Tokyo) against Prime Minister Yoshihiko Noda's recent decision to approve restarting two reactors at the Oi power plant. These were the first reactivations since all the country's reactors went offline after the disaster. Two prominent seismologists warned against the restart.

However, big business is opposed to a phaseout. Noda's weak decision was to plan for a complete nuclear phaseout by 2040. Anti-nuclear activists want something much faster. A

Greenpeace scenario allows Japan to recover economically and meet its 2020 greenhouse emissions targets without bringing any of its reactors back online. Greenpeace noted that before restarting reactors at Oi, Japan was completely nuclear-free for almost two months of the summer—the season of peak power demand—and did not suffer any shortages or blackouts. A plan was in effect for residents in several parts of Japan to voluntarily reduce their energy consumption—and they did.

In October, 2012, a European commission reported that almost all of the EUs 143 nuclear plants need safety improvements. Some of these measures were agreed on after Chernobyl but never implemented. Forty-seven plants (with 111 reactors) each have more than 100,000 people living within 30 kilometers (18 miles).

Germany, the world's fourth largest economy, closed eight older reactors and pledged to phase out the rest by 2022. Switzerland and Spain followed suit, banning the construction of new reactors. Belgium may phase out its nuclear plants as early as 2015. A referendum in Italy found 95% of voters against plans to revive nuclear energy, which Italy had previously abandoned in 1987 after Chernobyl.

France's new President, Francois Hollande, campaigned for the closing of almost two dozen nuclear reactors that have reached age 40. He pledged to reduce the nation's share of nuclear energy from its present 70% to 50%. Mexico has decided not to build 10 reactors but instead to develop natural-gas-fired plants. A number of other countries such as Australia, Austria, Belgium, Denmark, Ireland, Italy, Norway, Malaysia, and Sweden had begun to phase out nuclear even before Fukushima.

Germany's goal is to increase the renewable share of electricity from the current 16% to 35% in 2020. She will have to rapidly deploy renewable energy and smart grid technologies, building extensive offshore wind farms in the North and Baltic seas. Critics call this effort a gamble and predict it will likely mean higher electricity prices for consumers and make the nation more dependent on electricity from fossil fuels and France's nuclear plants. On the other hand, Germany's success could provide a road map for other countries.

While many nations are phasing out nuclear electricity, others in Asia and the Middle East plan to build many new nuclear plants. Of 65 reactors currently being built, more than two-thirds are being built in the BRIC countries (Brazil, Russia, India, and China). China currently has 14 reactors, with more than 25 new ones under construction. Russia is constructing nine. South Korea, which already has 20 reactors, is building six new ones. Saudi Arabia plans to build 16 reactors in the next two decades; the United Arab Emirates will build four (a way to extend the lifetime of their lucrative oil exports). The International Atomic Energy Commission says that global use of nuclear energy might even double by 2030 because of growth in Asia.

India has 19 reactors and plans more but has lately seen many fears and protests about its nuclear industry. India's regulatory board (AERB) has no power or real oversight. The government lacks a framework for decommissioning and is unclear about liability issues. Aruna Roy, a prominent political and social activist in India, questioned why India was going ahead with four new reactors when many other countries were phasing out their nuclear installations.

In the United States, the original home of the nuclear industry, official policy was still pro-nuclear, but there were growing cracks in the structure.

In June 2012, a federal appeals court ruled that the Nuclear Regulatory Commission was in violation of the law because it had not adequately assessed the environmental hazards of storing nuclear waste. In response to the ruling the NRC stopped issuing construction permits for 16 new

reactors and renewal permits to extend the life of 14 old reactors—at least until it can satisfy the court's concerns about "future dangers and key consequences."

Bio-fuels

It took us 125 years to use the first trillion barrels of oil. We'll use the next trillion in thirty years.
~ The Economist

Once upon a time, most people traveled so little they might go no more than 25 miles away from home in the course of a lifetime. My grandparents never traveled farther except the time my grandmother bravely took a train from Madison, Wisconsin to Cleveland, Ohio to help my mother (her youngest child) after my birth. But now each of us constantly uses up barrels of dead dinosaurs—so to speak—to get from here to there. We have to stop doing it.

Two-thirds of the oil used in the United States fuels transportation. The first quick-fix that comes to mind is to use other fuels. The popular alternative promoted in the United States by politicians and agricultural interests, is ethanol (grain alcohol) especially that made from corn. By 2012, almost as much U.S. corn went for ethanol as for consumption by either humans or animals. However, corn is probably the worst possible stock on which to base production of bio-fuels for efficiency, cost-effectiveness, and negative economic effects on farmers worldwide. The federal tax credit for ethanol expired at the end of 2011 after 30 years of subsidy to the tune of $20 billion, but producers expected to continue making the same amount—or more.

Lester Brown of the Earth Policy Institute warned that the high demand for corn by ethanol factories would result in higher prices for food staples that depend on livestock that eat corn. These staples include milk, eggs, meat, and cheese. The cost problem quickly affected Mexico, where the price of tortillas rose sharply. Tortillas are a staple food of poor Mexicans and contribute a large share of the protein in their diet. Meanwhile, the European Union, Brazil, Canada, Australia, and Argentina made an official complaint that the U.S. government subsidizes its own corn growers to the tune of $9 billion, which unfairly and illegally deflated world corn prices for other countries. Such unfair competition has ruined many small farmers in nations such as Mexico, contributing to the rate of Mexican migration north to the United States.

Producing ethanol from tropical sugarcane takes less land and uses less fossil fuel than starting with corn. The plant can be harvested twice a year or even more. While sugar is a food, it is not an essential or nutritious one, so its diversion to fuel is less of a problem. Sugarcane is the world's largest crop, and Brazil is the largest producer; its exports account for half the world's sugar trade. With sugarcane as the feedstock, Brazil is the one country that seems to have made ethanol a working proposition. Its biofuel industry has developed over 37 years, and is based on a highly efficient cultivation of sugarcane, using modern equipment. Even the cane-waste is used to generate electricity and feed cattle.

Brazilians developed their own car manufacturing industry based on ethanol. Flexible-fuel vehicles can run on any proortion of gasoline and ethanol. However some experts see Brazil's ethanol model as limited to Brazil or perhaps only to certain countries in the tropics of Latin America, the Caribbean, and Africa. One problem is that sugarcane cultivation requires a lot of water and is thus sensitive to the droughts that are increasing with climate change.

A prominent scientist, Paul Crutzen, found that ethanol produced from either corn or sugarcane contributes to climate warming even more than oil does. A 2005 study conducted by professors at Cornell and University of California-Berkeley found that turning plants into ethanol and biodiesel uses more energy than the fuels can generate. According to their study, growing

and processing corn requires 29% more fossil energy than the resulting ethanol yields, and soybean plants require 27% more fossil energy than biodiesel yields.

Cellulosic ethanol, made from non-edibles such as wood, grasses, plant stalks, and citrus peels has the advantages it would not compete with food crops and could be grown without fertilizer and tractors. However, the Cornell study found switchgrass even less efficient than corn. One drawback of bio-fuels generally is that by using biomass to produce fuel rather than to fertilize the soil, the farmer will need more synthetic fertilizers, which in turn require petroleum to produce. Ethanol and biodiesel both can raise levels of nitrogen oxide (NOx) emissions—NOx is a potent global warming gas. It also could take as much as 800 gallons of water to make one quart of bio-fuel, according to Josh Harkinson.

Another way to produce bio-fuels is from waste rather than green plants, by burning methane from either cattle manure or landfills. One technique turns slaughterhouse waste to fuel by a thermal conversion process. Environmentalists are cautious, fearing a replay of the polluting incinerators of a few decades ago.

In the Cornell study, Pimentel notes that the vast majority of federal ethanol subsidies go not to farmers but to large corporations that produce ethanol. Over the past 30 years of the U.S. ethanol tax credit, federal subsidies added up to $20 billion. However, production of biodiesel could be decentralized and non-subsidized. Annie Nelson notes that Rudolf Diesel originally designed the diesel engine to run on peanut and hemp oil, not petroleum. She says that American restaurants and institutions generate an estimated 4.5 billion gallons of used cooking oil each year, with most happy to get rid of this waste product. To use it, an individual needs a conversion kit for his diesel vehicle. Annie and husband Willie Nelson (the country music singer/songwriter) with several others have formed the Sustainable Biodiesel Alliance, focusing on local communities rather than agribusiness such as Cargill or large oil companies.

The latest promise of feedstock for bio-fuels is algae, which requires much less land area than bio-fuel stocks that cause deforestation and food shortages. Algae ponds can use agricultural by-products or municipal waste, performing a dual function. The relatively low technology makes mixed algae ponds well-suited for developing countries with low labor costs. Robert McIntyre says in *The Futurist* that the greatest potential production is in China and India, especially in conjunction with treating wastewater in the scores of new towns being built in these countries. Other likely sites are Southeast Asia, western Africa, southeastern United States, Louisiana, and Texas. Some algae grow in saltwater, and NASA scientist Dennis Bushnell lays out a plan for growing these halophytic algae in coastal desert areas using seawater.

There are critics of algae bio-fuel. Mark Anslow of the *Ecologist* says that natural strains of algae are not suitable for turning into bio-fuel, since they don't produce many lipid fats. "Making oil from algae grown on wastewaters still requires significant R&D." The process is still costly. Dr. Krassen Dimitrov, Australian biochemistry expert at the University of Queensland, estimated that algae oil would not be competitive unless oil prices reached $800 a barrel.

The DOE predicts that under current policies, ethanol and biodiesel will only supply about 11% of U.S motor vehicle fuel in 2030. Anslow quotes Dr. John Benemann, a lead researcher in DOE's algae research in the 1980s and 1990s:

> There are no silver bullets, no winner-take-all technologies, no technological fixes. The solution to our energy and environment crisis can only come from, in order, "demand" management, efficiency improvements and new energy supplies, to which maybe algae processes can contribute.

Bio-fuels have some advantages as a transitional fuel, but to focus mainly on bio-fuels to run our present vehicles is far too narrow a view. The government needs to set new standards for ethanol and other bio-fuels to make sure they are environmentally sound and to support only those that are. For several reasons, bio-fuels should not be the primary focus to meet our energy challenges. There are a number of other ways to think outside the box that we have put ourselves in regarding transportation.

Clean Coal

Every safety and environmental factor not installed and continually observed adds to the effective subsidy the rest of us pay because mine corporations, power plants, and electricity users don't pay the real costs per KWH.
> ~Ron Rockwell, journalist, scientist, and retired U.S. Navy Commander

In 2008 the advertising agency R&R Partners conducted a $35 million ad campaign known as "Clean Coal." Award-winning writer Richard Conniff notes that sponsors of the Clean Coal campaign included the world's biggest mining company (BHP Billiton), the biggest U.S. coal mining company (Peabody), the biggest publicly owned U.S. electric utility (Duke Energy), and the biggest U.S. railroad (Union Pacific). Conniff says "The phrase 'clean coal' now routinely turns up in political discourse, almost as if it were a reality."

To make the slogan real depends on developing technologies that aren't there yet.

Coal-burning currently accounts for 40 percent of CO_2 emissions in the United States. There are still other drawbacks to its use. Coal mining has always been and still remains a dangerous occupation. Jeff Biggers, author of *The United States of Appalachia*, says that more than 104,000 American miners died in the 20th century. The industry also destroys environment. In the last two decades alone, Biggers says, an estimated 750,000 to one million acres of hardwood forests, a thousand miles of waterways, and more than 470 mountains and their surrounding communities have been erased from Appalachia.

Besides CO_2 and other harmful emissions such as mercury and sulphur, besides mountain-topping and mine accidents, there are yet other dirty aspects of coal-fueled electricity. I am indebted to my late scientist friend, Ron Rockwell, for some of the following observations. First, he notes that more miners and their families die from black lung disease than are killed in the better-publicized mine incidents. (Ron calls them "incidents" rather than accidents since they often occur because safety measures were deliberately not installed in order to cut costs.) He also points to many fatal motor accidents that occur every year in Ohio, West Virginia, and Kentucky from collisions between residents' vehicles and overloaded coal trucks with bad brakes.

Ron notes that coal-fired power plants are the main cause of acid rain, which has decimated the Black Forest in Europe and many of eastern America's forests including the Smokies. Others say that damage from acid rain leaves forests and shade trees more susceptible to disease and pests such as the gypsy moth. Ron also notes that "All forms of coal mining—shaft, open pit, and their most monstrous offspring, mountain leveling—produce untold damage to groundwater as well as the more obvious damage to surface water quality and flow patterns." While the public associates U.S. coal mining with Appalachia, Montana has the most coal reserves and Wyoming leads in coal output. Illinois is also a major coal area. In fact, coal is mined in 27 states.

Carbon Storage: Theoretically, a technical fix could prevent the emission of carbon dioxide into the atmosphere from electricity generation and other coal-fired industrial processes. The idea of carbon management or sequestration is to capture CO_2 during its production and store it underground, thus preventing the worst effects of global warming. Jeffrey Sachs, director of the Earth Institute at Columbia University and also of the UN Millennium Project, heads the effort to develop the needed technology and infrastructure. However, carbon capture and storage (CCS) is still in its early stages and would be a very major undertaking. Sachs says that globally, 25 billion tons of CO_2 would need to be stored every year and estimates that global warming prevention by this means would cost about 0.1—0.3 percent of gross world product. The CIA World Factbook estimates 2008 gross world product at $70.65 trillion. By these rough estimates CCS would cost the world between $41 billion and $123 billion a year.

Some critics fear that people will depend on this hopeful technology to the exclusion of other measures, that it will be too costly compared with other policies, or even that it won't work at all. Environmental groups remain divided on the issue. A Greenpeace report supported by a coalition of other groups denounced CCS as a "scam….the ultimate coal industry pipe dream." But World Wildlife Federation and some branches of Friends of the Earth would not sign the Greenpeace document. Lord Adair Turner, former director-general of the Confederation of British Industry, worries about assumptions that CCS will be available by 2015. Turner says, "Almost every plan that I see has simply penciled [CCS] in, as if it were a given. If we don't have it, we will have a major problem." Retired physics professor Art Hobson says no new coal-burning plants should be built until CCS is actually in use, which he estimated would not be before 2020.

The *Ecologist* reported that a proposed coal-fired power station in the UK claiming to be 'capture ready' might in fact never be fitted with CCS technology if the market conditions to make CCS attractive don't occur. (If Cap and Trade works properly, the cost of CO_2 emissions will rise.) The 'readiness' consisted only in leaving space to build the capture unit and plotting a route to a depleted oil or gas field in which to bury CO_2.

North America′s first big carbon sequestration project is being built by EnCana Petroleum of Calgary, Alberta. Encana buys CO_2 from an American utility and stores it underground in southern Saskatchewan to force out unrecoverable oil. EnCana expects to store about 20 million tons of CO^2 when fully operative. According to an MIT database, there are now 29 large-scale projects of this sort. In order to sequester the 3.5 billion tons a year needed to reach the emissions goals being discussed by some countries, hundreds of such projects would be required. Many experts point out that there just aren't enough places to sequester the CO_2 once it's captured.

Another potential drawback of sequestering enormous amounts of carbon dioxide underground is the possibility that pressure from billions of tons of CO_2 could trigger earthquakes. Authors Mark Zoback, a Stanford geophysicist and Steven Gorelick, also of Stanford, call for more research on this issue.

Currently, China is the world leader in developing carbon capture and storage. China is also the world leader in burning coal. But the Chinese government has invested heavily in replacing old dirty coal plants with high efficiency ones, and in developing clean-coal technologies. An advanced clean coal project is GreenGen in Tianjin. It consists of first, a 250-megawatt power plant to convert coal into a mixture of carbon monoxide and hydrogen (syngas) to produce electricity. It is easier to separate out carbon dioxide from the waste output of a syngas plant than conventional plants. Current plans are to sequester the CO_2 in off-shore oil wells to aid oil recovery in the nearby Bohai Sea. The project's second phase involves a small pilot plant to

produce electricity from hydrogen. Phase three, scheduled for completion by 2020, will be a 400-megawatt, fully functioning carbon capture and storage plant.

But note the date: 2020. That's too little, too late. The Electric Power Research Institute found in a 2010 study that new nuclear and advanced coal-fired plants would not significantly affect greenhouse gas emissions until after 2025-2030, or 13 to 18 years in the future. There just isn't enough time to wait for all this. Climate change is pushing too hard. To be pragmatic, replacing the dirtiest coal plants with the most efficient and cleanest designs could reduce greenhouse gases a lot faster than the carbon capture and storage plans. Enphasizing CSP and windpower would be faster yet.

Another report, by the Union of Concerned Scientists in 2009, says the United States could meet electricity demand while cutting CO_2 emissions by 84 % during the next two decades by increasing energy efficiency, solar, wind, geothermal, and biomass energy.

Trees Store Carbon: A natural storage mechanism for carbon already exists. Large tropical and temperate forests sequester huge amounts of carbon. That is why it is doubly dangerous for humans to torch large tracts of rainforest as a quick fix to clear land for cattle or soybean fields. Or, by clear-cutting trees, they dry out the forest, while giving accidental fires plenty of residues for fuel. Normal humidity in the rain forest is very high, around 95 percent. Ten years ago, fires set to clear farmland were burning out of control in Indonesia, and the Amazon rain forest was also burning. An official of Brazil's Environmental Protection Agency said most fires are started by landowners trying to dispose of logging debris, but with such dry conditions, the fires spiral out of control. Some Brazilian scientists fear that drought and continued deforestation are pushing the rainforest towards a 'tipping point' after which it would turn into savanna or desert.

Rainforests once covered 14% of the Earth's surface but now cover less than six percent. Not only are the trees lost as carbon reservoirs, but here and now their carbon is released into the atmosphere. The Amazonian forest contains about 10% of the carbon stored in the world's ecosystems. Because of fires related to deforestation in the Amazon, Brazil is now one of the top producers of greenhouse gas. Environmental writer Indira Lakshmanan says that in 2005, drought and accidental fires killed at least half a billion metric tons of Brazil's trees. These trees stored carbon equal to the annual CO_2 emissions of California and New York State put together. Fires also release black carbon.

Temperate forests are at risk, too, and not only from logging. The U.S. Forest Service and other agencies have a controversial plan: setting fires to prevent wildfires, with prescribed burns not only in arid Western states subject to wildfires but also in the South and Middle West where there is well over 20 inches annual rainfall and few natural wildfires. Here in Arkansas, the U.S. Forest Service plans to burn 120,000 acres of the Ozark National Forest every year for the next ten years. The National Park Service and Arkansas Game and Fish Commission plan to burn additional thousands of acres, although the science behind prescribed burns is still debatable.

Forest Service statistics indicate that in the past half century, wildfires in this national forest affected fewer than 1,000 acres each year. Typically, they were caused by lightning and covered only a few acres, says dendrochronologist George Imrie. Thus Forest Service proposals for prescribed burns would increase the natural rate of fires by at least 120 times. Faced with global warming, to burn trees without a compelling reason is a retrograde policy that needs review.

"Two-thirds of the world's forests have been lost forever," says Francis Sullivan, then director of the World Wildlife Fund's Forests for Life Campaign. More than half of what forest remains is in four countries: the United States, Russia, Indonesia, and Brazil. Households in developed

countries can make sure that wood products or food products that originate in tropical areas (such as coffee or Brazil nuts and cashew nuts), are harvested sustainably. Americans can make sure that their burgers do not come from forests that are cleared for cattle, and Europeans can make sure that their soy products or animal feed do not come from Amazon clearing. Lakshmanan describes a successful Greenpeace campaign that targeted McDonald's restaurants in Europe for using soy from the Amazon to fatten chickens. Subsequently, the commodity trading alliance that purchases Amazon soybeans announced they would stop buying soy produced on recently cleared land.

Researchers have demonstrated how economic incentives could protect the rainforest, calculating that one hectare (about two and a half acres) in the Peruvian Amazon is worth $6,820 if sustainably harvested for fruits, latex, and timber; $1,000 if clear-cut for timber; and only $148 as cattle pasture. Local people in Malaysia recently saved a rainforest from the development of 40 skyscrapers on Penang Island by a deluge of emails and postcards to the state's Chief Minister. On the larger scale, here is one plan reported by Lakshmanan in the *Boston Globe*:

> Papua New Guinea and Costa Rica are leading a coalition of rain forest nations that advocate a carbon market within the Kyoto Protocol. It would award credits to nations that could prove they were preventing deforestation....The Brazilian government could offer tax breaks, subsidies, and other incentives to encourage better land management and low-impact logging. Protected parks and reserves measurably discourage clear-cutting and agricultural fires.

Trees are essential in combating global warming and they perform many other vital biological services as well. Tropical forests are home to many forms of life including countless unknown species. The Amazon rainforest contains nearly ten percent of the world's mammals, while as many as 300 different species of trees grow in a single hectare (2 ½ acres). In Brazil, the Amazon is also home to people from 180 different indigenous nations who make their livelihood from the rainforest and have great stores of wisdom about its many species. As for temperate forests, the trend toward smaller houses in the United States will potentially save a lot of native hardwoods. Several fiber plants notably hemp can replace trees in making paper and other uses. A letter to the *Ecologist* from a UK reader urges his country to show a positive policy to the rest of the world, perhaps starting a global movement, by planting all its marginal farmland, which he estimates at half of all farmland, in native, deciduous trees.

Not only as carbon sinks but much more directly, trees can change regional climates. Usually we have seen this as a negative, when large-scale deforestation produced hotter and more arid regions. But Marq de Villiers uses the positive example of Niger, one of the world's poorest nations, which satellite photos show is much greener than it was 30 years ago. De Villliers says that a small change in government policy, aided by a small increase in rainfall, produced seven million acres of additional tree cover. Under colonial administration, trees belonged to the government, so farmers often cut them for fuel. But the post-colonial Niger government turned ownership of forests over to peasants, who could earn money by selling branches, pods, and fruit, so it was now to their advantage to sustain the forests. De Villiers says three times this additional acreage might be the tipping point to change this regional climate to a degree cooler.

The late Kenyan environmentalist Wangari Maathai was chosen for the Nobel Peace Prize in 2004 for her great innovation, the *Green Belt Movement*, which pays poor women to plant tree seedlings in their own communities. Approximately thirty million trees have been planted in Kenya since the program began thirty years ago. They replenish the soil, provide a fuel source, and combat global warming. But that is not all. Green Belt has given women independence,

increased their children's educational prospects, and brought down what was once one of the highest birth rates in the world. It is almost a truism that when poor women get an education or gain some economic independence, preferably both, they have options besides bearing many children. Some critics said that Matthai's work was environmental not peace work, but a UN report issued about the same time as her Nobel showed how deforestation, and the water scarcity which often follows it, have frequently led to armed struggles in Africa.

Carbon Trading (or cap-and-trade) refers to the trading on the open market of certificates which represent various ways in which carbon emission targets might be met. First the government or other regulatory body sets greenhouse gas emissions limits (the "cap") with allowances for each industry and it creates a system for trading the allowances. Environmentalist Annie Petsonk describes it this way: "Essentially, the government opens a bank account for you and puts a certain amount of allowances to emit pollution in your bank account. If you can find a way to reduce your pollution below your allowable level, you have some extra pollution allowances that you can save for the future or to sell to someone else." Petsonk says a similar system after the 1990 Clean Air Act has cut acid rain pollution faster than predicted.

Obviously, the devil is in the details. First, the cap must be lowered year by year or nothing will change. Then in setting up allowances for each industry and in determining what activities count as emissions reductions, lobbyists could have a field day. Daphne Wysham, an environmentalist who opposes carbon trading, says one of the failures of the EU emissions trading system is that "governments essentially gave the right to pollute to certain industries. They set the cap too high, and as a result industry was able to emit as much as they had been emitting in the past and make a profit buying and selling these emissions rights." Wysham says the Lieberman-Warner global warming bill in 2007 was full of similar giveaways to the fossil fuel industry (it did not pass).

There are also many imponderables. Larry Lohmann, editor of *Carbon Trading*, says carbon trading schemes require exact measurements of emissions from numerous locations, although few countries are able to make such measurements. He notes that carbon trading assumes that cutting a ton of carbon emissions one way is as good as another. The CDM, set up by the Kyoto Protocol in 1997, allows industrial nations to pay developing nations to cut their emissions instead: "If Lahore [India] can cut a million tons more cheaply than LA, then let Lahore do the work and LA can pay for it." Polluters can buy rights to plant trees in Uganda or set up wind farms in Argentina. But Lohmann says we really don't know whether the cuts would be equally effective in the long run. "Offsets are an imaginary commodity created by deducting what you hope happens from what you guess would have happened." They must be chosen carefully.

Offsets may pay for large hydroelectric dams in China or India, with questionable impact on the climate, that displace thousands of small farmers. The AP found such projects have become the most popular technology in the CDM, especially in China. Axel Michaelowa, a member of the UN team that registers CDM projects, says the CDM system "can be 'gamed' fairly easily," but thinks its problems can be solved. In contrast, Michael Wara of Stanford University thinks the five-year-old CDM program "is an excessive subsidy that represents a massive waste of developed world resources." Meanwhile, some indigenous peoples in the Amazon oppose the market approach until their land tenure rights are secure. They fear that visions of billions of dollars in carbon credits could trigger a land grab.

Businesses in the United States are already beginning to buy and sell carbon credits on the Chicago Climate Exchange. At the beginning of 2009 it had 350 members with 11 percent of the

Fortune 100 represented. They expected President Obama to introduce cap and trade legislation which would undoubtedly raise the price of carbon dioxide. According to *Sierra* magazine, the price of a metric ton of CO_2 in January 2009 was $1.17. Professor Hobson says this amount was far too low. The American Clean Energy and Security Act (ACES) that includes cap-and-trade recently passed the House but of this writing had not yet passed the Senate (where it may be changed). The bill was opposed by conservatives and it disappointed environmentalists who nevertheless generally agreed that it was a first step, an imperative one.

However a new approach is ***cap-and-dividend***, which caps fuel suppliers rather than emitters. The Cantwell-Collins Bill introduces "upstream limits" on fossil production at the source. The plan is very much simpler than the Waxman-Markey bill (1,000 pages shorter) and does not require a big bureaucracy to administer. While it would raise fuel costs at the pump, the extra money paid by users would go into a non-profit trust, divided into equal shares, and sent out monthly to everybody in the country.

The Cantwell plan resembles one that treats the atmosphere as a commons—the Sky Trust—proposed by Peter Barnes, author of *Who Owns the Sky.* Barnes says this program is gradual, equitable, and market-based. Modeled on the Alaska Permanent Fund, the Sky Trust would pay equal dividends to all U.S. citizens from carbon permit sales. Any company that brings carbon into the economy must buy such a permit at the wellhead, mine entrance, or port of entry. Each year the number of permits would be reduced, as more of the economy is based on renewable energy. The Sky Trust plan requires no other rules and regulations, and gives money back to people to make up for the higher costs of fossil fuels.

It is widely agreed that a carbon tax would be more effective than a cap and trade system, but that the latter is more politically feasible. In September 2009, French President Nicolas Sarkozy presented his plan for a carbon tax on transport, homes, and factories, intended to be a model for other large economies. Sweden already has such a tax. But the plan was immediately challenged by two-thirds of French voters and many politicians, some within Sarkozy's own party. If a carbon tax is politically impossible, there are many advantages to cap and dividend or one of the planetary personal carbon trading plans.

Plan B: According to a survey by the UK *Independent,* slightly more than half (54 percent) of the 80 climate scientists they contacted are so concerned about the slowness of governments world-wide to cut CO_2 emissions, and so disturbed by the signs of climate change that are increasing faster than predicted, that they support study of a backup or Plan B. Note, they do not necessarily support any particular proposal, only its study. Plan B would consist of one or more technological interventions that were previously dismissed as being distractions from the main objective. At the same time, almost all of the scientists say that any such geoengineering strategy cannot replace international agreements to cut carbon emissions. It would be only a last-resort option. They worry that the public will look at these ideas as a 'quick-fix.' Some scientists, such as Dr. James Hansen, are definitely opposed to this approach.

Computer models show that blocking eight percent of solar radiation to Earth would counteract the effects of CO_2 emissions. Some of the concepts proposed for Plan B are pumping seawater vapor into the air over oceans to stimulate cloud formation, injecting the stratosphere with billions of sulfate particles to reflect sunlight, and fertilizing the sea with iron filings to nourish phytoplankton that absorb CO_2. A few scientists talk about blowing up a volcano to create a cooling effect. One of the most unusual ideas, originally proposed by an astronomer, would deflect sunlight with giant mirrors in space. The trillions of mirrors would be fired one million miles above the earth using an enormous cannon with a barrel more than half a mile in

diameter and 100 times the power of conventional weapons. However, the project would cost an estimated $350 trillion and would have to be done all over again every 50 years.

The water vapor idea appears to have more steam (no pun intended) than most other 'Plan B's.' It would send a fleet of 1,900 unmanned, wind-powered ships across the oceans, primarily the Pacific, to suck up sea water and spray it from tall funnels in order to create clouds. These clouds would reflect a small but significant percent of the sunlight that otherwise warms the ocean. Ships would be directed by satellites to locations with the best cloud-making conditions and far enough from land so that they would not interfere with rainfall. The cloudship plan (by British atmospheric physicist John Latham and engineer Stephen Salter) is relatively cheap at $9 billion according to a Copenhagen think tank directed by economist Bjorn Lomborg. But Lomborg seems to be proposing the cloud ships as a technical fix to *replace* more costly plans to reduce emissions. The main drawback there is that it might take up to 25 years to test and launch the cloudships. We do not have that kind of time to spare.

Plan B proposals have problems such as high cost, unknown effectiveness, geopolitical complications, and/or possible side-effects that might actually worsen the problem or create new problems. Even if such geoengineering stopped global warming, it would not stop other toxic effects of CO_2 such as acidification of the Ocean. Scientists are generally a cautious lot, who want to base their opinions on evidence. Many of the surveyed climate scientists spoke about the danger of unintended consequences and several mentioned the Precautionary Principle.

Some scientists and policy-makers have a different approach: aiding the natural world as a way to save ourselves. Professor Chris Rapley, director of the Science Museum, London, says 'to intervene on a massive scale in the Earth's climate system will certainly have unforeseen consequences. This is why Jim Lovelock and I have been encouraging thought and exploration of means to 'help the Earth help itself'; i.e. by amplifying carbon sequestration processes that the Earth already practices." This might involve massive reforestation and the greening of deserts. The EC Environment Commissioner, Stavros Dimas, has demanded a higher priority for the conservation of wildlife, saying that the EU's network of protected areas "will be a central element in mitigating and adapting to climate change. The conservation of biodiversity should be treated like our life insurance for the future."

Some plans involve the permafrost, frozen soil containing bits of dead plants that date back as much as 30,000 years. It extends to a depth of hundreds of feet in some parts of the arctic and subarctic, and underlies much of Alaska, Canada, Scandinavia, and Siberia, holding about 14% of the world's carbon. But as global warming progresses, this carbon sink is beginning to be a carbon emitter. One plan for natural defense against global warming concerns the tundra of Northern Siberia, a vast area whose frozen soils harbor 2.5 times as much carbon as do all of the planet's rainforests combined. Sergey A. Zimov, director of the Northeast Science Station in the Republic of Yakutia, initiated a long-term project in 1989 called "Pleistocene Park" in order to reestablish a previous ecosystem that vanished 10,000 years ago.

This ancient ecosystem was dominated by herds of large herbivores such as mammoths, woolly rhinoceroses, bison, horses, reindeer, musk oxen, elk, and moose, along with their predators such as cave lions and wolves. These large grazers actually maintained the grasslands they fed on both by fertilizing it and by trampling down the mosses and shrubs. The herbivores disappeared, probably after humans improved their hunting technology. As a result, the tundra-steppe turned into mossy tundra and forest tundra that supports few large animals. Of course there will not be any more mammoths or woolly rhinoceroses, but other animals still exist.

Among the first steps are reintroducing bison from Canada and, when herbivores are sufficiently abundant, bringing in Siberian tigers. Zimov says

There is more than just scientific discovery at stake here. Northern Siberia will influence the character of global climate change. The soil of the mammoth ecosystem harbors about 500 gigatons of carbon. As soon as the ice melts and the soil thaws, microbes will begin converting this long-sequestered soil carbon into carbon dioxide. Preventing this scenario from happening could be facilitated by restoring Pleistocene-like conditions in which grasses and their root systems stabilize the soil. The albedo—or ability to reflect incoming sunlight skyward—of such ecosystems is high.

The tundra, rainforests, tiaga, and Ocean are vital parts of the planet's own carbon storage system.

In the United States, there are plans to bring back the native bison in Great Plains states that have been greatly declining in human population over the past 80 years, creating a large, multi-state grassland park or "buffalo commons." While the Great Plains is not carbon-storing tundra, many scientists believe that restoring this natural ecosystem would provide carbon sequestration.

Chapter 3
Meeting the Energy Challenge

The four C's of global warming are coal, cattle, cars, and (over)consumption.

Individuals can attack the problem of global warming in several ways. First, we can educate ourselves about it. Then we can make changes in lifestyle and consumer choices, including investment choices. Many actions are simple, low-cost, and low-tech. We can weatherproof our houses, plant shrubs and trees to interrupt the cold winds of winter or provide shade from the western sun, walk, cycle, collect rain water for outdoor water needs (saving the energy needed to pump it), and buy energy-saving bulbs and appliances. Saving energy saves money too.

Well-to-do people who consume the most energy can reduce consumption accordingly. They have the means to buy 'green' products, build 'green' houses, and invest in renewable energy devices with a payback period of ten or 12 years. Poorer people don't consume as much energy; they don't heat and cool McMansions or gas up large SUVs; on the other hand, they may not be able to buy higher-priced organic food or invest in renewable energy that won't start paying off for a decade. And while their old second-hand car may put out a lot of fumes, they can't afford to buy a new hybrid or electric car. Policy and advice should take both groups into account.

Individual changes are very important but clearly not enough by themselves. The next way to meet the challenge of climate change is to join with neighbors and citizen's groups to make changes at the community level, to green our towns and cities as described earlier. Last, and certainly not least, is to put political pressure on governments to change national policy, to fund necessary R&D, and to promote strong international agreements that address global warming. The international meeting at Copenhagen in December, 2009 was a great letdown. As Ian Sullivan said on the Oxfam site:

> We're at the end of a two year UN process that has culminated in two weeks of wrangling, posturing and displays of political self-interest by rich nations in Copenhagen. World leaders have produced a hollow deal that has let down people around the world. In short, this is a historic cop out that will cost lives, and people in the poorest parts of the world will suffer even more from the effects of climate change….Leaders have also put off agreeing on a legally binding deal until the end of 2010. Although, let's be clear, this was the moment to reach the fair, ambitious and legally binding deal that we need.

The deal didn't arrive in 2010 or 2011, either.

Within the United States, the Apollo Alliance of business, labor, and environmental groups was the first (2004) to call for a massive program to change over to renewable energy. Leading scientists including Stephen Chu, now U.S. Secretary of Energy, argued for the plan. Some of Apollo's recommendations were incorporated into the stimulus bill of 2009. The Union of Concerned Scientists says that if we had a national standard that utilities obtain at least 25% of their power from wind, solar, and other renewable sources by 2025, this would create almost 300,000 new jobs and $13.4 billion in income for rural landowners.

In July, 2008, former U.S. vice-president and Nobel laureate Al Gore challenged Americans to abandon the use of fossil fuels for electricity within one decade, and to use electricity from renewable sources to power electric vehicles. Gore compared the scale of this challenge to the moon shot in the 1960s. Of course critics said it couldn't be done, and current economic problems and the 2012 election campaign now overshadow the plan.

It would not be as difficult as some people assume. This chapter glances first at energy efficiency and technical fixes. We look at the issue of energy storage, then transportation of all sorts. Next up is electricity, which in the future may come from wind power, several types of solar set-ups, geothermal sources, and ocean tides or waves. Another approach is micro-generation of electricity. Some unusual inventions and research areas may be 'blue sky thinking' or they may lead to breakthroughs. In this species-emergency let us remain open-minded and give them the benefit of the doubt. Our next topic is consumption. How can we develop the idea of 'enough' and do we need such big houses? Lastly we describe some noteworthy renewable energy projects abroad and at home in the USA.

Energy Efficiency, Technical Fixes

> *Efficiency is doing things right; effectiveness is doing the right things.*
> ~Peter Drucker, American writer and consultant, 1909-2005

Improving the way we use current energy is the first step and the one with the greatest impact. Conserving energy may not be as dramatic as new tech such as photovoltaic or tidal power, and conservation is often misrepresented as a self-sacrificing lifestyle. However, we can conserve both electricity and heat at all levels—from household to city, commercial buildings, and industry—and without any drastic change in our standard of living. Experts estimate that conservation has more potential to reduce fossil fuel use (in the United States) than any single alternative source of energy. Some of this savings will come from technical fixes and improved ('smart') products.

A simple change at the household level is to change to more-efficient light bulbs. Old-fashioned incandescent waste about 90% of the energy they use as heat. Replacing just one standard bulb by a compact fluorescent can reduce carbon dioxide emissions by about 150 pounds a year, as well as saving significant dollars for the householder. However, this may not be the last word since these bulbs contain mercury, thus requiring special disposal; and some find they don't last as long as advertised. LED (light-emitting diodes) is the next technology down the road, though still expensive. In a 2011 breakthrough, new crystals designed by researchers at the University of Michigan use purely organic compounds of carbon, oxygen, chlorine and bromine, and will not need the expensive precious metals LED bulbs now require.

The 'Light up the World Project' brings LEDs to developing countries.

Another way to save money, energy, and the environment is to look for the Energy Star logo. Energy Star is a government backed program that tests and rates a wide range of appliances and products for energy-efficiency. Besides refrigerators and clothes washers, this includes computers, roofing, windows, doors, furnaces, and commercial products such as traffic signals and food service appliances. An Australian website says Energy Star is an international standard for energy efficient office equipment and home electronics. Europe, however, instead labels many products TCO, a combined energy usage and ergonomics rating from the Swedish Confederation of Professional Employees.

On the national scale, the development of ultralow-sulfur diesel fuel makes it possible to replace gasoline engines, giving them more fuel efficiency and thus fewer emissions. Promoters of clean diesel fuel say that using ULSD fuel could reduce annual emissions from trucks and buses by 90% when the current heavy-duty vehicle fleet has been completely replaced in 2030.

To aid this changeover, federal diesel taxes would need to be lowered. They are currently higher than taxes on gasoline.

One energy fix is for gas producers to stop flaring and venting natural gas, which wastes about 6% of the amount used in American homes. Better technology makes it economical to end this waste. Yet another fix mentioned by Alex Hutchinson and Sarah Fecht in *Popular Mechanics* is this: Cut the red tape that in many states prevents home energy producers from plugging into the grid and receiving credit for their contributions.

SMART technology refers to an integrated network of devices that collect information, communicate, and can intelligently manage a system of heating or lighting in ways that save energy in the home. South Korea has probably advanced farthest with SMART tech and now has entire cities (U-cities) where people can control their homes and monitor their health through mobile phones, remote controls, and the Internet. According to Rachel Clode in the *Ecologist*, the EU and UK are trying to improve energy performance the same way, starting with SMART electricity meters that track home electricity use and pinpoint areas of inefficiency. Some energy and water suppliers provide them to customers.

Rational planning can save a lot of energy. For instance, in the UK a van-sharing website takes advantage of the hundreds of thousands of vans and trucks that make empty return trips every day. By sharing space, the participating transport companies save money as well as CO_2. David Hiscox, who founded the website, estimates that reducing the UK's empty vehicles by only 3% could save the country over a million tonnes of CO_2 every year (more in U.S. tons).

Industrial engineers in the U.S. propose an interconnected transport system using standard-sized containers that would travel at almost 100% capacity. It could save money for suppliers and for consumers, reduce CO_2 emissions, and also lower driver turnover, because it would allow drivers to spend more time at home.

Energy Storage

There must surely come a time when heat and power will be stored in unlimited quantities in every community, all gathered by natural forces. Electricity ought to be as cheap as oxygen, for it can not be destroyed.
~Thomas A. Edison, 1910

Probably the biggest technical fix needed right now is improved storage for intermittent renewable energy sources such as solar and wind. Several systems are already in use and others are proposed. Compressed-air energy storage is a well-established technology for saving wind that blows strongest at night. The compressed-air then runs turbines in the daytime, producing electricity when it is most needed. Two such systems, in Alabama and Germany, have been in use for decades, and a group of Iowa cities is setting up another. In the Texas panhandle, a company will store extra wind energy as compressed air in man-made salt caverns. Texas has more installed wind energy than any other U.S. state.

A new type of solar collector near Seville, Spain is the first commercial-scale concentrating solar plant to use a central tower with thermal storage—molten salt. Gemasolar provides 19.9 megawatts to 25,000 homes, day and night.

For saving electric energy at the end-point, cool storage in ice, chilled water, or chemical mixtures can save up to half of cooling costs for large electricity users such as commercial and

industrial buildings. Utilities could delay adding extra capacity by using compressed air or underground pumped hydro to meet their projected demand.

In August 2009 the U.S. Department of Energy awarded $2.4 billion in grants towards battery research and development. Much of the money went to the three biggest automobile companies, which may not stimulate innovation as well as funding many smaller companies would. According to Gerbrand Ceder of MIT, an estimated 10,000 different chemical compounds could be used as the basis for a more efficient battery, with only 1,700 of those "virtually tested" by computer models so far. Researchers at St. Louis University, Missouri in 2007 presented a fuel-cell battery that runs on virtually any kind of sugar source "from soft drinks to tree sap." They expected it to be developed for commercial use by now.

Engineers can refine the sodium-ion battery or greatly expand the electric-charging infrastructure, but many are looking for a breakthrough technology, perhaps some combination of batteries and capacitors. The mysterious EEstor ultracapacitor could revolutionize the electric car industry with its low weight, fast charging and other advantages, but something has kept it from the market. Several other innovative batteries are rumored to be much more effective than the ones presently in use, such as the Toshiba nano-battery announced in 2005 that was shelved without a public explanation. Such occurrences give rise to conspiracy explanations.

In August 2009 the U.S. Department of Energy awarded $2.4 billion in grants towards battery research and development. Much of the money went to the three biggest automobile companies, which may not stimulate innovation as well as funding many smaller companies would. According to Gerbrand Ceder of MIT, an estimated 10,000 different chemical compounds could be used as the basis for a more efficient battery, with only 1,700 of those "virtually tested" by computer models so far. Researchers at St. Louis University, Missouri in 2007 presented a fuel-cell battery that runs on virtually any kind of sugar source "from soft drinks to tree sap." They expected it to be developed for commercial use by now..

Hydrogen could be a low-cost alternative to batteries. In one plan, plug-in electric cars would serve as a distributed storage battery, using hydrogen fuel cells. Florida State University has a test house which uses some of the electricity produced by its solar panels to turn water into hydrogen for power on cloudy days. The element hydrogen is abundant in our world and non-polluting. But there is as yet no energy-efficient way to produce it. Hydrogen is a carrier of energy rather than an energy source, and itself takes a lot of energy to produce. The Florida State scientists are researching ways to use cheaper metals to replace the platinum that has previously made water electrolysis devices so expensive. De Villiers says one proposal would use massive solar arrays in the desert [such as CSP] to generate electricity to power fuel cells to produce hydrogen. Others promote pebble bed nuclear reactors to do this.

Flywheels also have a great deal of potential for storing and releasing kinetic energy. Although it's true that energy storage is an area ripe for innovations, carbon-producer propaganda has tried to convince the public that storage hardly exists, that there is nothing to be done when the sun stops shining and the wind stops blowing. Don't listen to this spin.

Return of Rail: It is really too bad that we in the United States let our railroads deteriorate. Trains were not only very efficient carriers of passengers and cargo, but also an important part of our history. They were certainly an important part of my own personal history, from watching the populated freight trains barreling by my grandparents' house—many freight cars held hoboes during the Depression—to my own trips by train. At age twelve, I traveled solo from Cleveland, Ohio to Madison, Wisconsin, changing trains and train stations in Chicago, very proud of

reaching this milestone in independence. During World War II, trains were crowded with soldiers and women, many pregnant, who were traveling to be with husbands in camp or to see them before they shipped out. The sense of solidarity and helpfulness was outstanding. On a long train trip in Mexico—a country that received much of the older rolling stock discarded from U.S. railroads—passengers in my car bonded like an extended family. Another aspect of trains was their impact on the senses, especially sound, from the hissing of wheels, gradually increasing tempo, clackety-clack rhythm, and mournful whistle faraway in the night. Train sounds undoubtedly influenced black jazz and blues music and white folk-singers.

However, the new generation of railroads will provide its own kind of excitement with very fast trains. First, we need to make a distinction between the high-speed 'bullet trains' that travel at 220 mph in Europe and Japan, and light rail or high-performance rail that upgrades existing railroads for trains to travel around 100 mph. The bullet trains cost billions to construct and are suitable for highly traveled corridors. The much less expensive light rail could replace a lot of car traffic even in largely rural states such as my own. In fact my region is especially suitable for a light rail system, according to the University Arkansas Community Design Center. Because the area was once served by trains, two-thirds of its population lives within a mile of the right of way, in seven cities laid out in an almost straight line. The railroad company is agreeable to negotiations for sharing its right of way with commuter trains.

Rail is especially important for moving cargo. Sam Hopkins, an investment analyst, says that the needs of international shippers are forcing the return of railroads to the United States. Port operators from the West Coast, which receives most of the imports from Asia, are losing business to both Mexico and Canada. Goods are moving too slowly (and expensively) from west to east across the United States compared to NAFTA neighbors that kept up their railroads and are planning new ports of their own. Tim Farrell, executive director of the Port of Tacoma claims that "West Coast ports generate more jobs than the Big Three automakers," and the port operators are lobbying strongly for high speed rail.

One bottleneck in U.S. rail transportation is the centrally important city of Chicago, where a rail car can take as much as three days to get from one side of the city to the other. Intermodal freight containers that easily move between ships, trains, and trucks can help fix this problem.

Flying

> *Thank God men cannot fly, and lay waste the sky as well as the earth.*
> ~Henry David Thoreau

Air travel is in trouble for several reasons. Its fuel is ever more costly and it puts out a lot of greenhouse gases. Mark Anslow, editor of the *Ecologist*, says that if aviation continues to grow in the UK at the predicted rate of eight percent a year, by 2050 it could consume the UK's entire allocation of CO_2. Environmentalists and rail passengers attacked the UK government for allowing rail companies to raise fares for four consecutive years, much faster than the rise of inflation. This in turn sent rail passengers, especially business travelers, to low-cost air flights that are much harder on the environment. According to Jason Torrance of the Transport 2000 pressure group, "The CO_2 emissions from a London to Brussels trip by rail is 10 percent of that by air."

Because of the environmental damage, a number of people in the UK including the Bishop of London have publicly pledged not to fly at all. The aviation industry estimates that as many as 3 percent of regular fliers in Britain have stopped flying because of the environmental impact,

while another 10 percent have reduced their air travel. John Valentine, a London stonemason who set up a website inviting travelers to take the pledge, says: "There is a need among people to be able to do something positive to cut their carbon emissions and reducing flying is the most obvious and significant way of doing it."

For long distance transportation it simply makes sense to stop subsidies to inefficient and polluting forms of transport such as airlines and long-haul trucking. Except for transoceanic or other long flights, we could replace plane travel with light rail and high-speed rail. Anslow asks if flying could ever be a sustainable mode of transportation, given the vast amount of fuel consumed by the aviation industry. Some airlines such as UPS and Virgin are taking vigorous steps to reduce their carbon emissions (and fuel costs) by investing in more fuel-efficient engines and types of aircraft. Airlines have gradually improved fuel efficiency (by about 1.2% a year) but Anslow says a more promising idea is to revive turboprop aircraft, which use between 25-33% less fuel than jets do on short-haul flights. An innovation for the future is the blended wing SAX-40, which looks like a stingray and theoretically would be more energy-efficient than a motorbike. But the SAX-40 would take $10-15 billion and 20 years to develop.

Another new-old idea is airships, which can be used for cargo transport or carrying passengers, using a fifth to a tenth of the fuel of airplanes—or even less. Airships were widely used before World War II, but airplanes became more popular because they had greater capabilities. The Zeppelin and its relatives can be made much safer than the Hindenburg that exploded in flames in 1937. The Hindenburg used highy flammable hydrogen gas, but all modern airships for the last 50 years have used helium.

A UK company has designed a modern airship, the 'SkyCat,' but needs $200 million to build the first full-sized ship. Several U.S. companies make airships for cargo transport but some are focused on military or security uses rather than civilian travel and transport. One problem for the industry is that while helium is one of the most abundant elements in theuniverse, it is not easily recovered. Helium used for industrial purposes is a byproduct of natural gas production. The United States produces 75% of the world's helium, with much of that stored underground near natural gas fields around Amarillo, Texas. Currently a helium shortage is driving up prices worldwide, due to complex pricing policies involving Congress and the Bureau of Land Management, as well as gradual dwindling of the underground reserve.

Or—suppose airplanes could travel without any fuel at all? An aviation company based in Nevada is currently working on a way to utilize gravity as a power source. The concept comes from Robert D. Hunt, a theoretical physicist and inventor who founded the company, Hunt Aviation. Blogger Alan Bellows says the GravityPlane "uses a cycle of climbing and descending to maintain its lift and forward speed, mimicking the behavior of the bodies of warm and cold air which make up the weather." The aircraft also uses bags of lighter-than-air helium, a non-flammable gas. The plane would be very large, but unlike zeppelins, the design is slender, streamlined, and has long wings. Bellows says, "Considering the GravityPlane's simplicity, its environmentally friendly propulsion, and its freedom from heavy and expensive fossil fuels, this concept could completely revolutionize aircraft design in the coming decades if it proves viable."

There are also solar-powered aircraft. In the spring of 2009 Eric Raymond set out on the first trans-European flight in a manned solar plane. Raymond planned to tour eight countries in Sunseeker II, which weighs 292 pounds or 506 pounds fully loaded, is 23 feet long, and has a wing span of 17 feet. Four lithium polymer batteries provide power to a small electric motor for takeoff and climbing. Once Sunseeker II reaches its cruising altitude of about 3,000 feet, solar

cells on the wings take over. It then cruises at 40 mph. NASA, Boeing, Pipistrel, Solar Impulse, and Electric Aircraft are also experimenting with solar-powered air flight.

Shipping: Who of us never dreamed of a trip around the world on a tramp steamer? Sea voyages take longer and cost more than air flight, but besides the romance, "nothing can beat a cargo ship berth for low-CO_2 travel" says UK reporter Cahal Milmo. However, a UN study in 2008 found that CO_2 emissions from the world's merchant fleet are greater than previously thought, accounting for almost 4.5 percent of the world total. (Shipping is not regulated under Kyoto.) Jacqueline Savitz of Oceana, an international ocean conservation organization, says only five countries produce more CO_2 than global shipping, which also produces nitrous oxide (NOx) and black carbon, both stronger warming agents than CO_2. And marine diesel releases polluting sulphur dioxide. Ships burn a type of fuel that is thousands of times dirtier than diesel used by trucks or trains, according to the Earthjustice organization. While ships make more sense than planes for transporting cargo overseas, Savitz says shipping should not get a free ride.

The EPA recently ruled that U.S. ships with large engines must switch over to cleaner fuel and emit less NOx. But the rules do not apply to foreign ships which make up about 90% of all U.S. ship traffic. The USA and Canada asked the International Maritime Organization for rules to cover foreign ships. One of the best pollution-control measures for ships is simple speed limits. Reducing speed by only 10% would cut down emissions by almost one-fourth, while reducing by 20% would cut emissions by more than half. Some shippers are already reducing speed, since it can save companies a lot on fuel costs, and some ports are requiring it. Savitz says that speed should be regulated from the national and international levels, for a faster turnaround..

There are other alternatives. Sailing ships served our species well for 6,000 years—from when the first Egyptian sailing ships, made of reeds, were used on the Nile River around 4000 BC, until about 1865 when steam power and then the internal combustion engine took over. Dmitri Orlov—a Russian-American engineer who writes about collapsing economies—says that the sailboat is humankind's greatest invention so far. He is part of the Sail Transport Network, a movement made up of people who believe we could return to a new version of the "tall ships" that carried passengers, cargo, and mail until 150 years ago. Orlov says that current commercial sailboats, built for racing or luxury, can't support sustainable sailing, since they rely on advanced materials that are becoming scarce and expensive. In "The New Age of Sail" Orlov suggests sailing designs that could work in our age of developing energy and resource scarcity.

Three young Dutchmen recently built a schooner, "The Tres Hombres," that has so far traveled 30,000 miles on windpower alone. Now they are building cargo ships with both motor and sails; these will reduce fuel consumption 50% over conventional ships.

Others are developing wind powered retrofits. Like the hybrid car, a ship can use a hybrid technology that relies on diesel engines when the wind is blowing from the wrong direction or dies away. The German company SkySails is developing one hybrid concept in which a high-tech kite, flying 100-500 meters above the ship, tows it on a cable fastened to the hull. At this height, winds are often stronger and less variable. The SkySails team believes that the kite, controlled by an autopilot, can cut the amount of fuel burned in half. The kite can be retrofitted to ships of various sizes. Tests also showed a surprising result: the kite tended to make the ship much more stable in heavy seas. This stability would be a great advantage for a cruise liner or a cargo ship that carries passengers, because it would prevent sea-sickness. However Orlov says that the SkySails is limited because it can only go downwind—whereas actual sailing ships overcame that limitation 2,000 years ago when Arab sailors invented the Lateen rig allowing a vessel to sail in any direction.

Canals and Rivers: For a different kind of cargo transport by water we might consider canal and river barges, a traffic that is largely invisible to most people. Yet an AP article says that the U.S. Coast Guard has for some time been overwhelmed by the great volume of cargo on the nation's 25,000 miles of inland waterways. That compares with 46,876 miles in the interstate highway system. It sounds as though the Coast Guard needs more funding and more staff.

Shipping by barge costs much less than alternative shipping methods. According to the Arkansas Waterways Commission, it averages less than 1 cent per ton per mile, compared with 2.5 cents by rail and 7.5 cents by truck. Many other countries make even greater use of their rivers and canals for cargo transport. It is an ancient method. Although not exactly green, as most boats currently use diesel fuel, energy efficiency is much greater and fuel emissions relatively smaller than with rail and particularly trucking. In addition, some people are developing alternatives to diesel for ships. Rex Harris, a scientist from the University of Birmingham, UK, converted a British Waterways maintenance narrowboat into a zero emissions vessel and thinks that the same technology could be applied to larger ships. Harris runs the narrowboat on hydrogen, converted to electricity in a fuel cell, which powers the motor and charges a backup battery. Hydrogen use in general has been held up by safety concerns but Harris safely stores the hydrogen as a metal powder, metal hydride. In larger ships he thinks metal hydride containers could also function as the necessary ballast.

In summer 2009 Berlin launched its first solar passenger boat, the "SOLON," which can carry up to 60 passengers around the city's waterways. A prototype of this craft crossed the Atlantic two years earlier. Other solar-powered tour boats carrying up to 125 passengers are operating in Germany and on the Nile River.

Of Cars, Love, and Death: Many declare that Americans have a love affair with our cars, however, I believe it is more like a shot-gun marriage forced by those who tore up all the streetcar lines and let the railroads decline. At any rate, most public talk about global warming prevention seems to center on cars. World-wide, says the *Ecologist*, more vehicles will be produced in the next 25 years than in the previous history of the motor car. That prediction is based on the premise that we do not make some other collective decision. We *could* decide to depend on something other than the personal automobile as our major transportation plan. After all, this system results in about 6 million U.S. crashes a year, killing about 40,000 people and costing each of us an average $1,000 year. Car accidents are the leading cause of death for people age two to 34.

There must be deep-seated psychological reasons why we humans, especially American males, are so attached to cars. I believe it is some combination of replacement for our bond with the horse, desire for independence, desire for power, and supernormal stimuli of size and speed. Look at what actually happened in the United States in the last 25 years, after the OPEC oil embargo. Tom and Ray Magliozzi of "Car Talk" say that we went "horse-power crazy."

> TOM: Back in the early '80s, when we temporarily gave a whit about fuel economy, the average car had about 100 horsepower. A small family car like the 1982 Honda Accord had 75 horsepower. By comparison, a 2007 four-cylinder Accord has 166 hp. A six-cylinder Accord has 244 hp! [Automakers are building cars with 300 hp and 400 hp but] there's not a car on the road that truly needs more than 200 hp.
> RAY: So in the past 25 years, instead of taking all of the technological advances we've made and making a 120 hp Accord that gets 60 mpg, we have a 244-hp Accord that gets 30 mpg.
> TOM: Why is that?

Why indeed. There is a related choice between big and small vehicles. The average car emits over twice its weight in carbon dioxide every year—one very good reason to drive smaller cars. But for many years the two most popular vehicles in the United States have been the Ford F-Series pickup and the Chevrolet Silverado, both considered large pickups. Such a vehicle may be useful for farmers and construction contractors, but how many Americans actually need a large truck? For a few months in 2008 during a period of high gas prices the Toyota Camry and Honda Accord replaced the F-150 and Silverado at the top, but by March 2009 the trucks were back. If the true cost of gasoline was reflected at the pump, as it is in Europe, those trucks would mostly disappear. Even with the double whammy of economic recession and continuing high gas prices, in December 2011 the situation was much the same.

In 2003 the U.S. Congress enacted one of the most counter-productive laws they could possibly think up. They legislated that people who bought SUVs weighing at least 6,000 pounds (ostensibly for "business purposes") could deduct the entire purchase price from their taxable income. Some manufacturers added weight to vehicles so that they would be eligible for the deduction, which further decreased gas mileage and increased greenhouse emissions from these "environmental disasters on wheels." In the first few weeks of the government's 2009 'Cash for Clunkers' program, the top eight clunkers turned in were SUVs. Unfortunately, the overall environmental effect of the program was negligible because the cars traded for did not have to be a lot more fuel-efficient. It was a wasted opportunity.

One argument used against buying a small car is that large cars are safer in a collision. In 1996, federal figures showed that light trucks—one third of registered vehicles—accounted for the majority of fatalities in vehicle-to-vehicle collisions. In collisions between a light truck and a car, 81% of those fatally injured were in the car. So if some heavy, poorly designed vehicles are incompatible with other traffic, does this mean that everybody should join an escalating competition to buy larger and larger vehicles in self-defense? Soon we might all be driving tanks. However, it is possible to make small cars safer, as well as sending gas-guzzlers to the tar-pits.

Speaking of lighter cars, the *Hypercar* concept looked like a winner. Physicist Amory Lovins, who makes a habit of thinking outside of the box, took a long, objective look at automobiles, now a century old. He noted that the modern auto is hardly different from cars of 50 years ago. (A recent study by the University of Michigan Transportation Research Institute found that in all the years since the Model T, average fuel efficiency of U.S. cars has improved by only three miles per gallon.) Lovins says the car "is really a remarkable machine" but notes it uses only one percent of its fuel energy to move the driver. Because of its weight and engine inefficiencies, the modern car wastes most of the energy it generates, which gets lost in accelerating, braking, air friction, and tire heat.

Thinking he could improve on that, Lovins figured out how to make a car only one-third as heavy by building it of carbon fiber instead of steel, designing it to be very low in drag thus requiring only a third of the power to move it, and converting it to hybrid-electric drive (later he changed the plan to a hydrogen fuel cell). The result is HypercarTM, a design that Lovins put in the public domain so that no company could patent it only to sit on the idea. Hypercar's carbon-fiber body is safer than steel because it absorbs crash energy better. The automobile would produce only five percent of the emissions from conventional cars, and be very easy to service.

By the start of 2001, the automotive industry had committed about $10 billion to developing this type of car,but industry leaders decided that the Hypercar would be too expensive to produce. Cars with carbon fiber bodies such as the Tesla electric and various racing cars start at

about $100,000 and go up from there. According to the October 2007 *Consumer Reports*, current hydrogen-fuel-cell cars would cost half a million dollars even if mass-produced.

However, a number of ideas from Hypercar have been incorporated into other advanced automobile designs such as the Eco Speedster.

Another innovative project is the BioCar Initiative being developed by researchers at several Ontario universities. It focuses on replacing petroleum-based auto parts with bio-chemicals and bio-fiber materials including industrial hemp.

Better gas mileage: For some years the U.S. has lagged behind European countries in fuel-efficiency. Gasoline is much more expensive over there so people look for high mpg (or kilometers per litre). More cars are metro-sized, more run on diesel, and Europeans tend to prefer fuel-saving manual transmissions over automatics. However, U.S. cars will soon be different.

In 1975, the U.S. EPA first set Corporate Average Fuel Economy (CAFÉ) standards. The Bush administration resisted raising them, particularly on trucks and SUVs. This foot-dragging was undoubtedly to help the ailing domestic auto industry, a large part of the U.S. economy. Nevertheless, ten states and two large cities sued the federal government because they said gas mileage requirements were too low for SUVs and pickup trucks. Daniel Becker of the Sierra Club, like the Union of Concerned Scientists and others who supported stiffer CAFÉ standards, said that the technology already exists to make all new vehicles average 40 miles per gallon within a decade, saving "an amount equal to what America currently imports from the entire Persian Gulf and could ever get out of the Arctic Refuge, combined."

In 2009 President Obama proposed a national CAFÉ standard that incorporated California's strict emissions rules to raise the average to 42 mpg for cars and 26 mpg for light trucks by 2016. The new standard would spur development of fuel-saving technologies and save an estimated 1.8 billion barrels of oil over the five years that followed—equivalent to taking 58 million vehicles off the road. Then in early 2012 the Obama administration raised fuel efficiency standards for cars and light trucks to 54.5 miles per gallon by 2025. Besides using far less imported oil and cutting greenhouse gases, these new standards were estimated to result in 570,000 new jobs and save owners $7,400 in gas over the life of the vehicle. This is the biggest step the U.S. government has ever taken toward cutting greenhouse gas emissions.

Greening the Fleet: Besides changing the type of cars that individuals buy, there are other strategies for which it helps to have an overall plan. For instance, Toronto institutions and businesses that operate a number of vehicles have allied to help reduce the city's smog and greenhouse emissions. The Toronto Green Fleets Partnership uses a number of tactics. It aims to increase fuel efficiency of existing motor vehicles through improved maintenance, it trains drivers in fuel-efficient driving techniques, uses alternative fuels, and is gradually replacing the fleet with low emissions vehicles or non-motorized alternatives. Toronto Green Fleets promotes alternative transport and delivers documents electronically rather than by courier.

Toronto Green Fleets emphasizes maintenance because the difference in harmful emissions between a poorly maintained and a well-maintained vehicle can be up to 50%. Regular maintenance also saves fuel. For instance, improperly inflated tires can add up to six percent in fuel consumption, and a dirty air filter can add 10%. The Canadian Ministry of Environment began a mandatory pollution emissions testing program for all vehicles in 1998.

Other possibilities are alternative fuels. Flex-fuel vehicles (FFVs) can run on any blend of gasoline and ethanol up to 85% ethanol (E85). The Union of Concerned Scientists says that E85

"can modestly reduce a vehicle's global warming emissions." However, fueling stations are not yet widespread and bio-fuels have other drawbacks. NGVs are natural gas vehicles, with Honda the only automaker currently offering passenger cars that run on compressed natural gas. As with E85, fueling stations for CNG are sparse in the USA.

Another approach is to stagger working hours and give incentives for carpooling in order to avoid city gridlock. A study by traffic engineers from Texas A &M University found that drivers in Los Angeles and New York City wasted 600 million gallons of gas while they were stalled in traffic, emitting 7.5 million tons of CO_2 that year. People caught in these traffic jams get to breathe the pollution, too, and build up their road rage.

Minis, HEVs, EVs: The Smart-for-Two gets 40 mpg and is popular in Europe, where almost a million people drive it. One great advantage of the car, unrelated to energy issues, is that it is very easy to park. Two or three Smart cars can use one standard parking space by parking diagonally. With its steel race-car style frame and high-tech airbags, it performs surprisingly well in crashes; a video of a crash test is available on YouTube. The car won the highest safety rating (five stars) from the independent Insurance Institute for Highway Safety. The Smart Fortwo is popular in Canada, where it is diesel-powered and DaimlerChrysler officially introduced it into the United States in 2008. A hybrid version may be next.

The Tata Nano, world's cheapest car at about $2,000, started selling in India in July, 2009. The four-passenger car goes up to 65 mph and gets somewhere between 52 and 56 mpg. Tata Motors says it emits less CO2 than most motorbikes. In China, a GM minivan called Wuling Sunshine (the operation is co-owned by two Chinese auto companies as required by Chinese law) is selling very well at just under $4,000. It gets 47 mpg. The key to making money from low-priced minivans is to sell a lot of them, and GM is looking for more overseas markets in South America, the Middle East, and North Africa. Apparently there isn't much demand for minivans in the United States, and the Sunshine would require upgrades to meet safety and emission standards in either the United States or Europe. (Maybe they should call it a motorbike?)

While the Tatas and the Wulings make good gas mileage, adding them now in large numbers will still add to the world's greenhouse gas emissions and use up peaking oil. It would make sense for drivers in the rich countries to *down-scale* to such cars. In fact, Ratan Tata, chairman of the company says: "A year ago, I would have said the United States is not on our radar screen [but now] we see an opportunity for a low-cost car. In this economic situation we can see perhaps there is a place for it." A European Tata that will go up to 78 mph, somewhat higher priced because of required safety upgrades such as airbags, is projected for sale soon.

HEVs are hybrid electric vehicles that combine an internal combustion engine with a battery and electric motor. The Toyota Prius, a gasoline-electric hybrid, has had over a decade of success. The Chevrolet Volt, an extended-range electric car, achieves 95 mpg (EPA gas mileage equivalent) for city driving. The Volt's power comes from an electric motor and a battery pack with a 40-mile range. (The average person drives less than 40 miles a day.) A small internal combustion engine kicks in to generate electricity for a total range of 375 miles. The battery pack can be recharged at home. Another hybrid is the Honda CR-Z, which costs half as much as the Volt and gets at least 39 mpg on the highway.

The next generation of HEVs is the plug-in hybrid, which uses larger battery packs that can be recharged with household electricity. Their 'greenness' partly depends on whether recharge electricity comes from coal-powered plants; but even if it does, they will save on overall emissions. (The EPA's Power Profiler can tell you how much of your own utility's electricity

comes from coal.) Also, cars that charge during off-peak hours will use electricity that power plants can't turn off at night. If recharged from rooftop photovoltaic system, the plug-ins would have zero emissions (when used as an EV).

EVs are the latest innovation, yet electric transport has been around over 150 years, since the 1830s and 1840s when several Scotsmen, Americans, and Englishmen built electric locomotives and electric carriages. By the early 20th century, electric vehicles and railways were common and a century ago electric cars outsold gasoline-powered ones. One advantage of electric vehicles is that they deliver power very efficiently. Electric motors can achieve 90% conversion efficiency. They also are mechanically quite simple, reducing the need for maintenance.

So why did we in the United States abandon these efficient vehicles? Some reasons were technological advances in internal combustion engines, abundant and cheap petroleum, the production and marketing genius of Henry Ford, and the deliberate replacement of electric streetcar networks by GM buses. (A court convicted a partnership of General Motors, Firestone, and Standard Oil of California for this conspiracy, but a higher court overturned the ruling).

Major automakers built and leased several thousand well-designed EVs in the 1990s, but repossessed and crushed almost all of them, as told in the film "Who Killed the Electric Car?" One reason for the carmakers' actions may be that the relatively maintenance-free EV would destroy a large and lucrative business in car parts and dealer garages. This is another example of the ways in which complex systems maintain themselves at the cost of overall efficiency.

Today, modern electric cars are finally here, including plug-ins (PEVs). Electrics got an earlier start in Europe and the UK, where the high cost of petrol combined with environmental consciousness makes green vehicles increasingly popular. Improved lithium batteries are one factor. Another is the possibility of cleaner electricity from wind or solar for the PEV. In 2012 a dozen new EVs and HEVs became available in the U.S., and in the first quarter, U.S. sales of hybrid and electric cars increased about 50%. The Sierra Club lists these five EVs selling in the U.S. in fall 2012: Mitsubishi i-MiEV, Nissan Leaf, CODA, Ford Focus EV, and Tesla Model $, ranging in price from about $23,000, with the Honda Fit EV only available for lease.

One drawback to electrics has been a limited range before a recharge is needed. Gasoline-powered cars typically run for 300-400 miles on a tank of gas, while EVs are more like 60-90 miles except for the more expensive Teslas. However virtually all models cover the average daily city commute of about 30 miles while not being 'road cars'. Pople do not routinely drive such long distances in UK and Europe where they have more rail options. A recent innovation that addresses this problem is resonant magnetic coupling. Marin Soljacic, Croatian-American, developed the technology which can power autos and other devices wirelessly using magnetic fields. Charging one's car could be as simple as driving over roadways with embedded magnetic loops, or parking above an embedded disk.

Another obstacle is lack of infrastructure. Many apartment buildings and houses do not have outside plugs. A recharge takes 6-8 hours in a regular socket. More powerful 'quick-chargers' can replenish the battery in 20 minutes or so but are fairly expensive and not yet available at the local service station. But the situation is changing rapidly, and there are those mysteriously shelved quick-charging batteries. John Walsh, UK journalist says "It's becoming obvious that the electrics are where the future of cars must lie."

A number of other alternative propulsion systems, variations, and combinations have been used or proposed. In one prototype from AFS Trinity, an advanced flywheel system improves energy capture and release from regenerative braking. Tata Motors planned to put a car that runs on compressed air on the market in India in 2012. It is called the Tata Mini Cat or Air Car. The

UK government started a project to acquaint the public with environmentally-friendly cars by making 340 vehicles of various types available to the public in eight major cities to test on short-term leases. Most are electric but at least one runs on wind turbine energy. In North America, the X Prize offered $10 million to the first team to produce a market-ready 100-mpg car. In May through July 2010, Michigan planned to host events involving 51 prototype cars from 41 teams.

Of course, we can go back to our original assumption, and ask whether the notion of private vehicles for everyone is the best possible paradigm. Cars still require roads and spaces to park, manufacturing concrete and asphalt are associated with fossil fuel emissions, and autos create traffic jams and accidents. Cars are dominant for the time being, but the *future* for cities should be mainly bicycles, feet, and non-polluting mass transit.

Wind power

> *American Wind Power Reaches 50-Gigawatt Milestone*
> ~headline, *Power Engineering,* August 2012

It took the United States only four years to double wind generation (2008-2012) and only nine years to increase it tenfold (2003-2012). Wind turbines now power 13 million American homes and represent the same generating capacity as 44 coal-fired power plants or 11 typical nuclear power plants. In addition to being non-polluting, one big advantage of wind power is that it can be brought on-line quickly, much faster than nuclear reactors or coal-burning plants.

Thirty-nine states have utility-scale wind farms. Texas is currently the United States leader in wind energy, followed by California, but the Great Plains has some of the greatest wind potential in the world. North Dakota alone has been called "the Saudi Arabia of Wind." Midwestern farmers who have suffered from the decline of family farms and the loss of manufacturing jobs are looking to wind energy. In West Texas some 'early adopters' are making much more income from wind farms than they did from farming in the drought-stricken region.

Winona LaDuke reports that a number of Native American tribes in the plains area are starting to build wind projects. Pat Spears, President of the Intertribal Council on Utility Policy, says "We believe the wind is *wakan*, a holy or great power." Together, twenty-three Indian tribes have the potential to generate more than 300 gigawatts of electric power. The Sicangu Lakota reservation in Rosebud, South Dakota despite its poverty and isolation has a 750-kilowatt wind turbine that sells electricity to the local market and an air force base. They next plan a large 30 megawatt installation. Because of the lack of U.S. investment in renewable energy, the Lakota had to import parts for their turbine from as far away as Denmark. More recently, foreign wind companies have set up shop in the United States, several here in Arkansas.

Futurist Ron Rebenitsch describes two hurdles that Plains energy producers must overcome in order to make a significant difference nation-wide. First, they lack the large electrical transmission lines they would need to send power to cities at a distance. Rebenitsch says the regional grid, now 20-50 years old, would need extensive upgrades to do this. He also says that our aging national energy transmission system poses a threat to the entire economy. The interconnected electrical grid of North America has been called "the biggest machine on the planet" and its upgrading would be costly. On the other hand, the 'small wind' idea of localized power production would use existing transmission lines to service local communities.

The second hurdle is from the intermittent nature of wind and the need for research on better forms of energy storage. However, although the wind is unpredictable, it is always blowing

someplace. New research at Stanford University indicates that connecting multiple wind farms can give a steady supply of base-load power.

Another limitation on U.S. wind development is that Congress sometimes allows production tax credits but sometimes lets them expire. Rebenitsch notes that these changeable tax policies have led to several boom and bust cycles in the wind industry. "This uncertainty makes it difficult for industry to build the expensive production facilities to lower the cost of producing wind-energy equipment." Countries such as Germany, Spain, and Denmark, where the market is more stable, have advanced much further in developing wind-power.

Rebenitsch says that we must do three things to boost the use of wind. The first is to extend the production tax credit (PTC) for long enough to construct factories to produce turbines in large quantities. The second is to expand research into storage technologies. Third is to upgrade the national transmission system. Small wind advocates say that production tax credits need to be extended to small-scale producers and non-profit organizations.

Offshore wind turbines have a huge potential because wind over water is stronger and steadier. Provey notes: "Most of the country's category six and seven wind (seven is the top rating, equivalent to 'superb') is located off the East Coast, West Coast and on the Great Lakes." Happily, most U.S. population lives near these wind sources. Provey lists several other advantages of using offshore wind: turbines are easier to transport, do not require overland high-voltage lines, and there are more suitable sites with fewer zoning and visual issues. Offshore installations are more costly but several projects are now in the works in the U.S. Northeast The Atlantic Wind Connection (AWC) is a 350-mile underwater transmission line to span the coastline from New Jersey to Norfolk, Virginia. It would provide up to 6,000 megawatts of electricity, similar to the output of five large nuclear reactors or up to a dozen 500 MW new coal plants. The first stretch of AWC is expected to be in service by early 2016.

The size and scale of wind farms can be an issue. Several communities across the United States are resisting large-scale wind projects planned by outside corporations. In the U.K. corporations have built most wind projects, says Dr. David Elliot of the U.K.'s Open University, and this has created resentment in local communities. Tara Lohan cautions that wind companies are unwise to use the corporate model of the coal industry "with large, out-of-state corporations holding the cards and rural communities being forced to play what they are dealt." That is what is happening, for instance, in Greenbrier County, West Virginia. However, there are other models of wind-power development. Local communities own nearly half of German wind projects. In Denmark, which gets about one-fifth of its electricity from wind power, Elliot says:

> Most of the schemes are owned by local people, often via local co-ops and community-based enterprises, and there is much less local opposition. Direct ownership may not be the only factor influencing responses to wind projects, but it is interesting that the Danish wind farm enthusiasts often recite the old Danish proverb: "Your own pigs don't smell."

The local approach seems to be working. Germany is the world's leading producer of wind power. Now German companies are planning to build up to 1,000 wind turbines in the sea off the country's north coast. The European wind-power industry claims that given legal and financial support, wind projects could provide energy for 50 million Europeans in less than a decade.

There may be problems with noise if wind turbines are positioned too close to residences (closer than 200-300 feet). The difficulty is not so much decibels as infrasound, and some people are more sensitive to it, finding it not only irritating but debilitating. Again, locally-owned companies are more likely to work to overcome any possible disadvantages.

Solar Photovoltaics. Solar cells convert sunlight directly into electricity, using the semiconductor silicon. By ignorance or intention, for decades the media always equated "solar energy" with "solar photovoltaic electricity" (PV), always pointing out that PV was more expensive than electricity produced by conventional means. (Nor did they mention that coal and nuclear energy are heavily subsidized, so this is not strictly a free market outcome.) There are, of course, several other forms of solar electricity and many other forms of solar energy, such as solar water heaters, which are cost-effective and have been utilized for over a century in sunny climates such as California, Australia, Florida, and Israel. (According to the DOE, hot water accounts for 17% of the energy used by buildings in the U.S.)

There are constant advances in technology, for instance a solar film, thin as paper, which uses a semiconductor compound (CIGS) on a polymer base. The films can be mass-produced cheaply by the roll and stuck to buildings rather than requiring costly installation. The CEO of Filsom, the Swiss company making these films, believes they will cut the cost of solar electricity to 80 cents/watt by 2012, thus undercutting carbon power at $1/watt. Nanosolar and Miasole in California replace the silicon in solar cells with cheaper, more plentiful and durable CIGS (copper, indium, gallium and selenium). Another innovation is the "spray-on" solar cell from Konarka. The CEO of Applied Materials predicted that electricity produced by solar PV panels will cost the same as traditional sources of residential power in 19 countries, including Italy and Spain and Brazil, and also in California by 2012.

The price of PV modules has steadily declined since the seventies and especially recently (60% from 2008-2011). It is now competitive with the retail price of electricity in several sunny countries and U.S. states such as California, Hawaii, and New York where electricity is expensive. Solar photovoltaic power stations can replace "peakers"—smaller generators used to prevent rolling blackouts by providing extra electricity at peak times such as late afternoons in the summer. A number of PV solar parks exist in Germany and California.

The International Energy Agency (IEA) has a photovoltaic initiative that operates through a network of teams in member countries such as the United States "to enhance international collaboration efforts through which photovoltaic solar energy becomes a significant renewable energy source in the near future." Denis Hayes (the originator of Earth Day) says, "solar cells are poised to become a classic disruptive technology. As prices fall with economies of mass production, demand will skyrocket around the world." Hayes proposes that America mandate a five-year federal procurement of solar modules for the roofs and south-facing walls of every army barracks, post office, and school in the country, starting in the Sun Belt. The federal tax credit for renewable energy should be extended at least ten years, Hayes says, because the unpredictable nature of tax credits in the past has been disruptive for companies in this new field. Also, the U.S. should adopt the German buyback model that has been so successful in overcoming consumer resistance to buying today because they expect prices to fall next year.

In 2003, the University of California's Board of Regents voted unanimously for a Clean Energy and Green Building policy. (University students and Greenpeace had campaigned for a year preceding this decision with the slogan "UC Go Solar!") The solar energy commitment by UC, in addition to a pledge by the Los Angeles Community College District to generate 10% of the energy in new buildings by onsite renewable energy, was expected to increase the total amount of grid-connected solar power in the United States by nearly 30%. A Greenpeace study notes that academic institutions are becoming a strong force for building a clean energy economy in the United States. If every college campus were to make the same commitment as UC, the total number of grid-connected solar installations would increase fifty times, dropping prices by

almost one-fourth. This price reduction would make solar photovoltaic electricity competitive with fossil fuel energy in many parts of the country. +++

Concentrating Solar Power

We have proved the commercial profit of sun power in the tropics and have more particularly proved that after our stores of oil and coal are exhausted the human race can receive unlimited power from the rays of the sun.
~Frank Shuman, *New York Times,* July 2, 1916

Exactly one hundred years ago, Frank Shuman built the world's first solar thermal power station in Meadi, Egypt. Shuman's plant used parabolic troughs to power a 60-70 horsepower engine that pumped 6,000 gallons of water per minute from the Nile River to adjacent cotton fields. However this breakthrough was forgotten with the outbreak of World War I and the discovery of cheap oil in the 1930s. Innovators rediscovered Shuman's basic design in the 1970s and developed it further. (The use of mirrors to create heat from sunlight—"burning mirrors"—has actually been around for several thousand years, and Leonardo da Vinci's notebooks contain designs for solar concentrators.)

There is more than one way to use the sun's rays. While photovoltaic devices use the sun's light, thermal devices use the sun's heat. In either case, an array of mirrors can concentrate the light or heat. This is *concentrating solar power* or CSP. One type of CSP is *concentrating photovoltaic* (called CPV) which uses mirrors to concentrate the sunlight on heat-resistant PV panels that convert it into electricity. *Concentrating solar thermal power* (CSTP) produces electricity using large mirrors to convert sunlight into high-temperature heat. For instance, at a CSTP plant in Nevada parabolic troughs containing fields of curved mirrors focus solar radiation on collector tubes of water, creating steam that powers electric generators. The materials used are inexpensive and such systems have been operating in the Mojave Desert for twenty years.

The Department of Energy stated that CSP plants built in nine percent of Nevada could meet the electric energy needs of the entire United States. This would require a new electric grid, however. Also, De Villiers says for transporting electricity long distances, DC power instead of the current AC grids would minimize voltage losses. The project would also require a large and lasting commitment by the government. The Spanish government committed to price supports for CSP for the next 25 years. +++

We've already mentioned DESERTEC, a large-scale, international plan to use existing deserts as the site for CSP as well as wind energy. It was developed by the Trans-Mediterranean Renewable Energy Cooperation or TREC, a seven-year-old network of scientists, engineers, investors, politicians, and others across sixty countries. Besides promoting the DESERTEC concept in general, they are collaborating to join Europe, the Middle East, and North Africa in one such plan (EUMENA). According to the UK branch of TREC, less than one percent of the world's deserts covered with CSP plants could produce as much energy as the world uses now.

DESERTEC-UK lists the following benefits of concentrating solar power:

It could have a huge impact in cutting worldwide emissions of CO_2. Countries like China and India can leapfrog the 'dirty' phase of development. Countries like Saudi Arabia can move directly from being oil-rich to being solar-rich. The USA can meet all its energy needs from its southwestern states. These things can help break deadlocks in international negotiations about cutting CO_2 emissions.

Geothermal Electricity: Thousands of feet below the Earth's surface one finds steam and water at the boiling point. For almost two centuries, some industries have drilled wells that bring this heat to the surface to power steam turbines that produce electricity. The source is clean, reliable, and almost limitless—the first six miles of the earth's crust contains 50,000 times more heat energy than is contained in all its oil and gas resources, according to Earth Policy Institute. But it costs a great deal to extract this geothermal heat, $5 million or more for one well. The expense of drilling has delayed development of geothermal power

According to Marla Dickerson in the *Los Angeles Times*, the situation is now changing, as large investors such as Warren Buffet and Google Inc. put money into geothermal research and new plants. They are motivated by the high price of fossil fuels, concerns about global warming, federal tax credits, and new laws in some states especially California that mandate more renewable energy. Geothermal electricity currently costs 4 to 7 cents a kilowatt-hour, making it competitive with wind power.

The United States is currently leading the world in use of geothermal heat to make electricity, and California is leading the nation with over 2,400 megawatts. Dickerson says the Geysers, a complex of 22 geothermal plants north of San Francisco, is the largest such facility in the world. Nevada is the second largest geothermal producer in the United States. Reno has a geothermal power plant that produces enough electricity to power every home in the city.

Dickerson says a new technology, enhanced geothermal systems or EGS, has the potential to greatly reduce the cost and difficulties of developing geothermal sources. EGS pumps water underground, which fractures hot rocks; the resulting steam is sent back to the surface to power the generators. +++

Ocean Power, Tides and Waves

Can ye fathom the ocean, dark and deep, where the mighty waves and the grandeur sweep?
~Fanny Crosby, American Protestant hymnist, 1820-1915

Back in the 18th century Benjamin Franklin, that always curious and inventive American founder, watched the ocean currents on his trans-Atlantic voyages and speculated on the possibility of using its power for human purposes. For us today, marine energy has several advantages, being more constant and regular than solar and wind energy. Another advantage of tidal energy in particular is proximity to major population centers, since over half the world's population lives within 50 miles of a coast. Besides the tides, there are several other developing technologies that make use of the ocean's power.

The oldest tidal plant, in France, dates from 1966 but the technology was developing slowly until two recent technical advances made the idea of tapping tidal energy more feasible: better magnets and plastics able to protect underwater metal from rusting. Tidal power technology is described by Jeannette J. Lee as like "little wind turbines on steroids, turning like windmills in the current." Because of the greater density of water, fewer and smaller turbines can produce the same amount of electricity as wind turbines. Tidal engineers build on wind power lessons.

A number of small companies have applied to the FERC for permits to study tidal sites in the United States, expecting to be first in line for development rights. Carolyn Elefant, co-founder of the Ocean Renewable Energy Coalition, says that after several decades of experiments, the technology is now sufficiently developed to make business sense. Lee lists some prime U.S. tidal

sites as Cook Inlet, Resurrection Bay, and Knik Arm near Anchorage in Alaska; Cobscook Bay and the St. Croix River in Maine; and San Francisco Bay. A tidal power pilot project may launch soon in San Francisco Bay, as Oceana Energy works with U.S. Navy engineers, local utilities and governments. If the Golden Gate experiment works, tidal currents could become a major power source along America's heavily populated coastal cities, according to Neil Peirce. But energy researcher Roger Bedard expects the first large tidal plant in North America to be in Nova Scotia. "They have the mother of all tidal passages up there" says Bedard. +++

There is also great potential power in ocean waves. Researchers at Oregon State University say that two-hundredths of a percent of the ocean's wave energy could power the globe. While wave energy technology is less advanced than tidal power, the number of good wave sites is enormous. Lee says wave plants are under construction or planned shortly in Makah Bay near Washington State, off the coast of Portugal, and near Sydney, Australia. Other projects are planned by Ocean Power Technologies, which became the first marine energy company listed on the stock exchange in 2004. OPT has several 40-kilowatt "PowerBuoys" that can generate electricity for about 15 cents a kilowatt hour, but plans larger buoys by 2012 that could make electricity for five cents a kilowatt, which is competitive with wind power. +++

A newly-designed turbine blade that imitates the wings of airplanes creates a water turbine capable of converting 80% of a wave's energy for use. This Cycloidal Wave Energy Converter was designed by USAF Academy engineer Stefan Siegel. A simple but elegant new energy device called the "Searaser" has no electronic parts but simply pumps water either through a sea-level turbine or up to a reservoir on surrounding cliffs for storage until it can flow back down to the sea through turbines. The Searaser team believes electricity prices will be lower than with most other renewable technologies, and inventor Alvin Smith thinks its simplicity makes it especially appropriate for the less-industrialized world. +++

There are concerns about the possible effects on ocean life of marine-generated energy and high-voltage cables on the ocean floor. The Environmental Defense Fund has led utilities, entrepreneurs, environmentalists, and local governments to work on principles for safely developing wave and tidal energy, and the Obama administration adopted its main recommendations including resolution of a jurisdictional dispute between the FERC and the Interior Department that was holding up marine energy development in the United States.

River currents also have energy potential that can be tapped without building dams. Verdant Power planned to install two underwater turbines in New York's East River in November, 2006, monitoring effects on fish before installing up to 300 more turbines, to power about 8,000 homes. A Massachusetts company (Free Flow Power) proposes to install 180,000 underwater turbines at 55 sites in the Mississippi River to produce "hydrokinetic" electricity. Free Flow hopes to begin construction by 2013 but at present is working through the permitting process and talking with riverboat operators who have questions about whether the turbines can coexist with river traffic. Turbines and water mills need faster currents than the average river provides, but a new device (VIVACE) enhances slow currents by creating vortices. VIVACE was invented by a University of Michigan marine engineer, Michael Bernitasas, and the name stands for Vortex-Induced Vibrations for Aquatic Clean Energy. +++

Another type of ocean power is OTEC, or Ocean Thermal Energy Conversion. The Ocean is the Earth's largest solar collector, receiving 70% of all sunlight. OTEC uses a heat engine to make use of the difference in temperature between water on the surface, warmed by the sun, and the much colder water in the deeps. Its greatest possibilities lie in the tropics, which have the

most temperature difference. Research is ongoing in Japan, India, Netherlands, and France, as well as the United States. +++

Yet another kind of 'blue energy' derives its power from the mixing of saltwater and freshwater where rivers flow into the sea. The energy of reverse electrodialysis (RED) is released through osmosis. Prototype plants in Norway and Netherlands already produce a small amount of power. This could be a supplementary rather than major source of power.

Micropower (or microgeneration) is the production of low or no-carbon heat, electricity, or combined heat and power (micro-CHP) for individual buildings, small businesses, or small communities. Technologies include small wind turbines (sometimes roof-mounted), geothermal heat pumps, solar thermal collectors, photovoltaic electricity, and water turbines. As an organized, commercial movement promoting small scale generation of sustainable energy, Micropower seems to have advanced farther in the UK than in the U.S.

Micropower can give consumers significant savings in energy costs, but as in any new field, consumers should beware of sales-pitch exaggerations. Many governments and local officials as well as energy companies are uncomfortable with the idea and may need to change planning regulations to make retrofits easier. However, several countries including the U.S., UK, and Germany allow consumers to sell electricity to electric companies. The UK began a program in 2006 providing grants to individuals, communities, and businesses for microgeneration. Several prominent British politicians are fitting Micropower facilities to their homes.

One advantage of Micropower is its efficiency. Centralized power stations can waste 40-50% of their fuel through heat loss at the plant, transmission and distribution. In contrast, micro technologies make productive use of fuel, typically more than 90%. Micropower from solar, geothermal, wind or water sources does not use any fuel (except in the initial production of its components). Another advantage of Micropower is that it relieves pressure on the grid during peak hours, and may forestall the need to build new generating plants. *Distributed generation* includes larger, commercial power projects on warehouses, factories, and office buildings. +++

Other Far-Out Possibilities

Anything one man can imagine, other men can make real.
             ~Jules Verne, French pioneer of science fiction, 1828-1905

I have previously mentioned the rooftop solar device by physicist Joseph C. Yater, backed up by several patents and articles in scientific journals. It was brought to public attention at a 1976 Congressional hearing by Congressman Leo Ryan, who was probably the most pro-solar political figure who ever graced Congress. The hearing was published by the government printing office under the title "Converting Solar Energy into Electricity: A Major Breakthrough?" Unfortunately, Congressman Ryan was murdered two years later at the landing strip near Jonestown, Guyana and could no longer champion renewable energy. As described in the '76 hearing, Yater's Reversible Energy Fluctuation (REF) Converter rectified thermal noise generated in an electrical circuit, cascading large numbers of such circuits to produce electric power. Its practical development may have depended on micro-electronics not yet available. In fact, others are now working on similar concepts using contemporary technologies. +++

Another simple yet largely overlooked source of power is kinetic energy, generating electricity from routine motions that are already occurring. Just as waves and tides can run power plants, individuals might charge a cellphone battery by plugging it into a tiny generator

attached to a wheel of their bicycle. IBM predicted greater use of such kinetic energy sources as one of its top five technology predictions for 2012-2016. +++

On a much larger scale, the wasted energy of moving trains can be captured in several ways. Many electric trains have regenerative brakes that slow the train by spinning its electric motor backward, which produces excess electrical energy. This excess can be sent along the rails to another train that is accelerating. Or, to use this extra energy a different way, engineers are installing a state-of-the-art battery at an electrical substation of Philadelphia's transportation system to collect excess wattage from subway cars and connect it to the city's power grid. Thirdly, a company in Israel is fitting train tracks with special pads that convert the mechanical pressure on the rails into electrical energy. And designers of transit systems in China, Italy, and Korea envision capturing the air-deplacing rush of a passing train with miniature wind turbines in cross ties. +++

We must learn to distinguish between those who work at the frontiers and fringes of scientific invention, and others who are self-deluded or scam artists. At a time when the species desperately needs creative possibilities, it would be wrong either to dismiss out of hand any unusual energy source—or to be gullible about it. The situation resembles the world of conspiracy theories, discussed in the previous book, and requires the same discernment rather than automatic debunking.

There is a long history of attempts to make perpetual-motion machines or the equivalent, and many would-be inventors have been suspected of, or arrested for bilking their investors. In modern times a surprising number of such inventors are conspiracy theorists with right-wing politics. Yet it is at least plausible that either corporations or government military intelligence might try to suppress or steal a breakthrough invention. In contrast to the perpetual-motion inventors, a number of scientifically knowledgeable people are working in the New Energy Movement, especially in the area of Zero Point Energy extraction (ZPE). There are also developments based on the work of Nikola Tesla. I do not have the scientific knowledge to evaluate any of this research, but hopefully academic scientists who have an open mind will test it and publicize the results.

New Forms of Cement Production: The world's cement makers create 2.5 billion tons of cement every year. Cement production requires high temperatures and currently creates an estimated five to ten percent of global CO_2 emissions. One way to reduce the impact of cement production is to reduce our use of cement, particularly for an excess of parking lots and roads that contribute to sprawl. The second possibility is a technical fix. In 2003, the 12 largest cement companies in the world decided to take joint action and establish benchmarks. The French firm LaFarge has since developed a new process and cut emissions by 16%, aiming for 20% in 2010. Also, new forms of cement are manufactured at a lower temperature. Eco-Cement can be made from a variety of solid-wastes, can be recycled, and it absorbs CO_2 as it dries. +++

Another significant contributor to greenhouse gas emissions is rice farming. The Environmental Defense Fund is currently field-testing various rice-growing changes such as turning leftover rice straw into bio-fuel or draining fields for a few weeks mid-season, to find which changes can reduce methane emissions. The best strategies can be widely shared with rice-growing countries. +++

Military Consumption: The Pentagon is the single largest oil consumer in the world. The U.S. military uses 320,000 barrels a day (2006) to supply approximately 15,000 aircraft, 170,000 combat and tactical vehicles, 300 ships, and 190,000 fleet vehicles. Jet fuel, distillate, and heavy

fuel oil are the major types of oil used. The Department of Defense paid $20 billion for energy in 2006, and 85% of it was for oil. According to Sohbet Karbuz at *Energy Bulletin,* only 35 nations consume more oil per day than the Pentagon.

The DoD began efforts to reduce its excessive energy use after the Energy Policy Act of 2005, focusing first on buildings and facilities, and electricity rather than oil. Much more reduction is needed. A mid-range solution is to end current wars and streamline the Pentagon budget, for instance dropping Cold War weapons. But the longer-range answers to heavy military use of energy are imperial liquidation, as proposed by Chalmers Johnson, and then by universal disarmament. Green Party activist Don Fitz notes that the military is the only sector of the economy where greenhouse gas emissions could be reduced to zero—by conversion of the military-industrial complex to peaceful production based on green technologies. Seventy years ago, it took Detroit only six months to retool from cars to tanks—and now the defense industry needs to retool from tanks to electric vehicles and wind turbines. +++

Consuming Less

Excessive consumption is the last environmental taboo, in the sense that no one— environmental groups, governments, consumer groups—wants to discuss it.
~Lisa Mastny and Brian Halweil, Worldwatch Institute

Twelve percent of the world's people live in Europe and North America, but they account for 60% of global household consumption expenditures. It appears we affluent folk use five times our share. Meanwhile, one-third of humans live in South Asia and sub-Saharan Africa. They are responsible for only 3.2 percent of household consumption. When consumers in wealthy nations reduce their excessive use of energy and resources, they make an opportunity for billions of poor people to improve their quality of life. However, the message for both rich and poor is that "a better quality of life—not just an amassing of goods—should be the goal of consumption." +++

World-wide, about 200 billion pounds of plastics are produced every year. Every sort of consumer product requires energy to manufacture, and most plastic items use petroleum as a feedstock. As of a decade ago (1997) in the United States three percent of total petroleum was used for the manufacture of plastics. There are of course many other problems with plastics because they are not biodegradable and are often used for throw-away products that end up trashing the planet and killing wildlife. Two main strategies here are to buy and use fewer plastic products, especially those designed for throw-away, and to look for biodegradable plastics now being developed, based on renewable sources such as cornstarch, algae, grasses, or beans.

Manufacturing and buying fewer *things* saves finite resources and energy to manufacture them, and all the energy needed for packing and transportation and display to bring together the buyer and the things. For the individual and family, one way to go about consuming less energy is to re-use much of what comes into your household. You can also buy second-hand items from thrift shops, resale shops, used furniture stores, and flea markets. You can grow your own tomatoes and make your own Valentines. (See Voluntary Simplicity, later on.)

On the larger scale, however, people worry about what will happen to the economy if all of us don't buy, buy, buy. It is an article of faith that if we fail to go shopping, the economy will fall apart, and we will lose our jobs. The answer is that we need to transition into a different sort of economy, a steady-state economy that does not depend on continual growth or on the constant expansion of consumer wants by advertising. Mastny and Halweil say we need to think in terms

of new business models such as designing products that are more durable, and selling services instead of products.

The current green trend of "product service systems" or PSS was originated by a Swiss technology analyst, Walter Stahel, in the 1970s. As Linda Baker explains, PSS is built on the fact that it is often costly and unnecessary to buy a product, such as a power mower used only six or eight times a year. The average American car is used only one hour a day or less, and designer Victor Papanek noted that the average power tool gets only 30 minutes of use in a lifetime. Instead of the burdens of ownership, PSS emphasizes the value of service. Some familiar examples of PSS are public libraries, video rentals, taxis, and tuxedo rentals. In Portland, Oregon there is a car sharing service called Flexcar, one of five such services in the U.S. The largest car sharing company in North America is Zipcar, which claims that every Zipcar replaces more than 20 privately-owned vehicles. +++

Baker points out that the PSS concept can also apply to businesses. Chemical Management Services (CMS) matches industrial customers with a chemical services provider. Under this plan, one General Motors assembly plant reduced the number of chemicals it used by 43%, for a total savings of $750,000 yearly. The Chemical Strategies Partnership is a non-profit organization that promotes CMS for the purpose of reducing chemical use, with significant environmental benefits and cost savings. An EU initiative from 2006-2009 will apply the PSS concept to other economic sectors such as food, transportation, and energy.

Shop until We All Drop?

We evolved as a uniquely acquisitive species, driven to possess things in a way no other creature does.
~John Naish, *Ecologist*, February 2008

There are deep psychological reasons why many of us in the affluent countries seem almost addicted to buying things. John Naish says that recent discoveries in brain-scanning science and evolutionary psychology point to a hard-wired human brain that impels us to "get more of everything, whenever possible." Our ancestors faced dire shortages of food and other survival basics during Ice Ages, droughts, and disasters. Naish says our desire-driven nature evolved between about 130,000 and 200,000 years ago. But the strategy that served primitive humans in times of scarcity does not help modern ones in times of abundance and resource depletion. Naish says this strategy could, in fact, "dump us on the cosmic ash-heap."

Humans may have the potential for acquisitiveness, which wealthy individuals have indulged throughout history, but one does not see anything resembling current widespread consumption until the 20th century and the Age of Advertising. Our culture, economic system, and ideologies greatly reinforce those primitive acquisitive instincts so that overconsumption has been democratized and is now spreading to the middle classes of developing nations. More abundance leads to more consumption, no matter the cost to the environment or future generations. But this simply can't go on indefinitely. As Naish says, "We need an 'enough' button."

First we need to disengage the buttons that manipulate us, such as envy and the fear of not being accepted into the group. Regarding these buttons, columnist Philip Martin describes the Beverly Hills store that sells Prada, its façade unmarked by any identification:

> The absence of signage makes it clear that if you have to ask, you'll never know what it is you can't afford. Such are the codes of affluence; brand names serve to signify inclusion more than they certify

quality. Like a lot of companies these days, Prada is not so much in the business of selling tangible goods as it is in selling a feeling of belonging to the beautiful class….A cheap quartz watch will keep time better than a Rolex, but it won't emanate an aura of insiderhood.

The beautiful people are seen as the successful ones whose memes we evolved to imitate. However, it is media preoccupation with celebrities who are rich and glamorous that makes them seem to be the most successful individuals. In terms of human survivability, the most successful individuals to imitate are those who have learned how to live simply, peacefully, and self-reliantly on a small acreage.

Naish says that brain scans conducted by the U.S. National Institute of Mental Health show that two regions of the brain are activated when a person feels socially inferior, and one way to stave off the pain of second-rate status is to acquire consumer goods. Other researchers have found that people with low self-esteem are more materialistic. The *Journal of Consumer Research* article says: "By the time children reach early adolescence, and experience a decline in self-esteem, the stage is set for the use of material possessions as a coping strategy for feelings of low self-worth." The researchers conclude that efforts to raise self-esteem can decrease the dependence on material consumption. But why must children's self-esteem decline in early adolescence—does this happen in every country? Could it relate to the lack of adolescent rites?

So, how do we develop the enough sense? Perhaps the straitened economy will do it faster than anything else we can devise.

McMansions vs Tiny Houses: Regarding the 'enough' button, one thing to take a good hard look at here in the United States is the size of our houses. Recently a popular magazine showed the specifications for a very 'green' and sustainable home someone built in a Southern city. It was a careful, admirable project except for one detail: the house was 4,000 square feet, and there was no mention of a big family. Four thousand square feet is the equivalent of 21 rooms, each 12 feet by 12 feet. To me that's a castle.

It is very strange that the average size of *households* has gone down from 4.6 people in 1900 to 2.58 people in 2002—yet the average size of *houses* doubled, from between 700 and 1,200 square feet in 1900, to an average 2,000 square feet in 2000 (and over 2,500 square feet just before the current housing crisis). Meanwhile, the lot size is shrinking. Do we need such big houses for two or three people? They require more energy and resources to build, and they take more energy to heat and cool. Very few are built to be green and sustainable.

Moya Mason suggests that our increasing demand for personal, private space is increasing the size of houses and also separating us from the other people with whom we live. We have fewer shared activities. Master bedrooms become almost a self-contained apartment. Mason says "Middle-class parents have built an unprecedented barrier between themselves and their offspring." Young children often have individual bedrooms and adolescents feel entitled to this amenity. We add new spaces such as home offices and media rooms. Mason says that electronic entertainments and the Internet isolate us and also take up more of our personal space.

Another consideration is that the income tax mortgage exemption applies to vacation homes, second (or third) houses as well as to extremely large houses. Should we all be subsidizing these luxurious abodes? The mortgage exemption was originally intended to help home ownership, not to encourage conspicuous consumption. Perhaps U.S. citizens should ask for new legislation.

But the 20th century tendency to build ever larger houses in the United States is coming to an end, accelerated by economic collapse. The U.S. Census Bureau reports that in the third quarter of 2008, the average size of new home-starts was 2,438 square feet, down from 2,629 square feet

in the second quarter. In response to growing awareness about climate change and sustainability, a number of architects, homebuilders, and homeowners had already begun the new trend toward smaller houses, that is, houses the size they used to be. Small houses conserve both energy and land. They also cost less, allowing people to buy homes without getting into debt beyond their means. The small house movement is part of New Urbanism or Traditional Neighborhood Design (TND) that brings back sidewalks and front porches, preserves existing landscape especially large trees, and includes well-crafted details throughout the house.

An international competition in 1995 solicited small, environmentally-friendly and energy-efficient house designs and published a book containing the top 34 designs. The editors noted that while the contest defined 'small' as 1.250 square feet or less, the Japanese and many Europeans consider 1,000 square feet quite generous for a city residence. According to *Dwell* magazine, the average American home is almost twice the size of homes in Europe and Japan.

Architect Susan Susanka's book *The Not So Big House: A Blueprint for the Way We Really Live* was a 1998 bestseller. Susanka commented that "Homeowners are clearly more than ready for an alternative to the huge, impersonal 'starter castles' that are filling our new suburbs and developments." A 2008 survey by the National Association of Home Builders backed her up, finding that more than 60% of potential homebuyers preferred a smaller house with more amenities than the reverse. Susanka says smaller houses can make better use of space without sacrificing a feeling of spaciousness. Some suggestions: make one space serve more than one function, keep open traffic patterns, use built-ins, vary ceiling heights from room to room, keep walls light and neutral, and use elements such as alcoves, niches, window bays, and lofts.

One Atlanta family of four decided to move out of their three-story dream house into a house half the size, donating the difference to The Hunger Project for two center/clinics for African villages. Kevin Salwen says his family gained trust and bonding from living in the smaller house.

Some architects and builders design *really* small houses that could fill the needs of students, singles, older adults, homeless, and Zen practitioners. The Tiny House Company builds houses as small as 300 square feet and the company's co-founder Andy Lee lives in a 350-square-foot home in Lexington, Virginia. An architect in Oslo, Norway—Sami Rintala—designed the 205-square-foot, two-floor Box Home. Yale graduate student Elizabeth Turnbull built her own living space in New Haven on top of a flatbed trailer. It is 8 feet by 18 feet (144 square feet) and has three solar panels. Gregory Paul John, director of the Small House Society, lives in a home in Iowa City that's 140 square feet—about the size of Henry Thoreau's cabin on Walden Pond.

Another direction for little houses is very low-cost housing for developing countries. A New Mexico builder, Brian McCarthy, has made a prototype house from a standard shipping container that is 40' x 8' x 8 ½' tall. Shipping containers are quite plentiful. The resulting 320-square-foot house costs about $8,000 including hook-ups for utilities. It is painted a sunlight-reflecting white. McCarthy and his partners see the houses as part of communities for workers at *maquiladoras*, the U.S. manufacturing plants along Mexico's border.

Besides reducing size, there are many other ways to make homes more energy-efficient. But Orlo Stitt, a builder of energy-efficient houses, says that bankers, buyers, and appraisers do not yet know how to evaluate the energy-efficient improvements in a house. Many in the business predict that soon an energy-efficiency rating will be required for all home sales just as miles per gallon is part of the decision to purchase a car.

Other Countries: The European Union published a report in January 2007 that predicts a grim future for the countries of Europe in the face of climate change. The EU wants to assure

that global temperatures do not rise more than 2 degrees Centigrade above the pre-industrial level, and so asks member states to commit to cutting their emissions of carbon dioxide to 30% below 1990 levels by the year 2020, *as long as other developed countries agree to the same reduction.* If others do not agree, the EU asks for a unilateral target, a cut of 20%. European countries already emit much less CO_2 per person than does the United States, although people in Western Europe have similar living standards to ours. In 2001, for example, Germany used only about 50%, France 54%, Sweden 60%, and Denmark 39% of U.S. per capita energy.

Sweden has now become the first country to pledge to become completely free of fossil fuels by 2020. Much of Sweden's domestic heating has already been converted to geothermal power. Sweden plans to tax polluting industries and subsidize conversion to green energy. Germany is the world's leader in wind power, with over 11,000 wind turbines and plans to build wind parks offshore. The German government has decided to phase out nuclear power. Under Angela Merkel's leadership with support from all major German parties, Germany aims to reduce carbon emissions 36% by 2020. +++

Spain is in the forefront of this renewable energy surge, with wind farms and photovoltaic electricity both part of Spanish strategy. Spain is second only to Germany and just ahead of the United States in wind power capacity. The region of Navarra in northeastern Spain already gets almost 70% of its electric energy from 1,100 wind turbines and a large solar park, cooperatively owned. Navarra is likely to be the first in Europe to be energy self-sufficient. +++

Although the solar cell was invented in the United States fifty years ago, Japan has taken the lead from the United States in producing solar photovoltaic modules. In 2003, Japan produced three and a half times as many solar cells as the U.S. and Europe produced almost twice as many cells, says Denis Hayes. Japan, however, is not targeting renewables for its domestic needs to the degree that the EU is, only three percent by 2010. (This may have changed since Fukushima.)

In 2006, Hong Kong Construction announced an agreement with a local government of Inner Mongolia to plan a wind farm totaling almost 400 square miles. They aimed to produce between 100,000 to 150,000 kilowatts of capacity by 2008. In late 2009 the world's largest manufacturer of thin-film solar modules, First Solar, Inc., announced plans to build what may become the world's largest solar field—over 25 square miles of Inner Mongolia—in the vast desert north of China's great wall. At two gigawatts, the project would replace two coal-fired plants. The CEO of First Solar, Mike Ahearn, said "The Chinese government is further along in its thinking about solar than we've imagined."

The Clinton Climate Initiative is negotiating with partners in India on possible solar farms in Gujarat and Rajasthan that would be even larger than China's. India, the world's largest democracy with over one billion mostly rural and poor people, is at a crossroads. The country can use polluting coal and oil to power its rapid development, or choose a clean energy future.

India is also a young country. Almost 60% of its people are under age 35 and they are taking leadership. The Indian Youth Climate Network (IYCN) grew to over 300,000 members in its first year and sent out the Climate Solutions Road Tour in 2009. Traveling in vehicles that run on solar power and vegetable oils, they planned a 2,100 mile trip to educate rural Indians about climate change. The tour is accompanied by a solar-powered electric band, Solar Punch. IYCN also distributes a solar lantern called the Sunflower. The 24-year-old co-executive director of the new organization, Kartikeya Singh, says that young people need a vision for building a country that does not imitate the U.S., pointing out that the U.S. model is not sustainable. "It's up to us to define how India should develop."

According to a business magazine, Australia currently is "the global hotbed of alternative energy entrepreneurship." One Aussie company is about to build the world's first commercial 'solar tower' in the outback. The 1,600-foot structure will act as a giant greenhouse to superheat the air, which then rises to create a vacuum sucking in wind to power an array of turbine generators around the tower. The solar structure will power some 100,000 homes without producing any pollution or greenhouse gases. In late 2006, the Australian government announced funding to construct the world's largest photovoltaic electricity plant in Victoria State. With its largely hot, dry climate, Australia is ideally situated for solar applications, although Australian activists complain that it took too long to get started. The country produces very high GHG emissions per capita. Australia, like the United States, has refused to sign the Kyoto Treaty.

In Panama a windfarm project is underway that is expected to be the largest in Central America, possibly the largest in all of Latin America. It will provide about 220 megawatts of power and prevent the emission of about 450,000 tons of carbon.

United States Renewable/Conservation Projects: Even without much federal support, the pace of state, local, and business efforts to conserve energy and resources was quickening before Obama's election and the 2009 economic stimulus. A major reason is that they can save money for users. Also, industrialists are aware that oil is peaking and that other resources are being depleted—even if some business-supported think tanks and politicians deny such problems. In one example of industrial adaptation, General Motors in 2006 completed an assembly plant built with one-fourth recycled materials, reflective roof to reduce heat absorption, rainwater collectors on the roof to flush toilets, and other relatively low-tech innovations. GM expects the plant to save more than 40 million gallons of water and 30 million kilowatts of electricity over its first ten years, which means $1,000,000 saved yearly on energy compared to a typical factory.

In early 2010 the giant retailer Wal-Mart announced plans to eliminate 20 million metric tons of greenhouse gases from its products by 2015, the equivalent of emissions from 3.8 million cars. The sustainability plan is a partnership between the store, Environmental Defense Fund, University of Arkansas, and PriceWaterhouseCoopers, a large professional services firm. It will include a sustainability index to appear on products. Wal-Mart's 2012 report showed substantial progress in some areas—for instance it has diverted 81% of waste from landfulls, which generated $231 million from recycling revenue and savings. The company has also increased the share of locally grown produce by 97%. Critics say they are lagging in other areas, such as renewable energy. Also, Wal-Mart's constant pressure on suppliers to keep cutting prices leads to lower quality and less durable consumer goods, which must be replaced more often.

Several large U.S. retail companies including Whole Foods and Kohl's, also Apple's main data center in North Carolina have converted entirely to renewable energy. These companies help show the way. The United States, which uses so much of the world's energy and creates so much of its global warming gases, could emulate Sweden and take the pledge to be free of fossil fuels in a decade or so. This only requires the political and public will. If Inner Mongolia can convert to renewable sources on a large scale, surely we can in the United States. +++

Greenpeace and the Energy [R]evolution: Greenpeace International has laid out a new energy path for the world as a whole, including blueprints for individual countries. Working with various research centers, Greenpeace has the figures to show that investing in renewable R&D and a smart grid now will save nations a great deal of money later:

Unchecked growth in energy demand, increases in fossil fuel prices and the cost of CO_2 emissions will result in total electricity supply costs rising from today's U.S. $1,450 billion per year to more than $5,300 billion by 2050. While a renewable transformation will require an up-front invewtment in infrastructure, the cost over time is U.S. $6.5 trillion less than if we do nothing to replace fossil fuels with clean energy.

Greenpeace also emphasizes the development of new jobs in the energy transition, noting that almost half a million people are now working in the renewable energy industry in Europe.

A major goal of the Greenpeace plan is to make sure that emissions peak in 2015, decreasing as rapidly as possible towards zero from then on. Greenpeace says that developed countries need to cut their 1990 carbon emissions by 40% by the year 2020. By the same year, with support from industrialized nations, developing countries must slow the growth of emissions by 15-30%. These are goals of what we might call the world's Seven Year Plan.

Greenpeace recommends that all nations phase out subsidies for fossil fuels and nuclear energy, while increasing research and development budgets for renewable energy and energy efficiency. Another essential is to protect tropical forests with a special funding mechanism.

The organization also prepares individualized scenarios for many different countries such as South Africa, which is the world's 12th largest carbon emitter, and South Korea, which is the seventh. For example, the first Energy [R]evolution report for Turkey (56th largest carbon emitter) compares two possible scenarios. If current trends and energy policies continue, by 2050 Turkey's per capita carbon emissions will double, and electricity prices will rise by about 50%. Using the Energy [R]evolution plan, per capita carbon emissions will decrease, and after a short-term increase in costs, the price of electricity will become noticeably cheaper.

Another group, the Center for Global Development, has analyzed suitable areas for concentrating solar power in China and India and estimated the costs of deploying it. Researcher Kevin Ummel says that the potential for CSP in China is at least 16 times greater than what is currently produced by coal and in India, at least three times greater. A program to expand CSP in both countries could provide 20% of their electricity within four decades, and would require subsidies of $340 billion.

(For comparisons to this figure, the U.S. currently plans to spend at least $350 billion to upgrade 5,113 nuclear weapons, and a proposed 0.03% tax on U.S. financial transactions is estimated to raise $350 billion in nine years.)

From Darkness to Light

Why do we always think that if something is high tech then it has to be sophisticated or complicated? The purpose of technology is to make things easier and simple.
~Ratnesh Yadav of Husk Power Systems in India

In the industrialized world we tend to forget that one third of humanity lives as peasants. Currently about 1.3 billion people in the world do not have access to electricity. Most of them live in rural villages. Centralized power projects—which are usually fueled by coal—benefit the minority of people who live in urban areas but not those out in the country, who are off the grid.

Many of these villagers use kerosene lamps or diesel generators to supply light, sources that are polluting and dangerous to people's health. They produce a large amount of greenhouse gas emissions. In fact across the world this 'dirty light' produces CO_2 equivalent to emissions from an entire nation like Argentina. The murky fuel-powered light can also be very costly, with

households spending up to 30% of their income on lighting. Dr. Evan Mills, founder of the Lumina Project to promote low-carbon alternatives to fuel-based light, says that those without electricity pay a fifth of the money spent globally on lighting, but are receiving less than 1% of the total lumens [a measure of light].

There are a number of alternatives to kerosene. One is the solar-powered light-emitting diode (LED) lamp, for instance the "Mighty Light" developed by a couple of entrepreneurs in New Delhi. According to Patrick Avato, director of the Lighting Africa program, a recent conference drew over 50 companies promoting off-grid lights. He said the market was producing more solutions than governments or NGOs were.

Another avenue is explored by Husk Power Systems, a social enterprise in India. Husk Power builds and operates small biomass gasifiers that produce electricity from waste rice husk and distribute it to those living within about two miles. This system delivers energy for the lowest capital cost in the world—$1/watt. It uses locally available materials such as bamboo instead of metal, and trains local people to operate the system. Local women make incense sticks from the residue and sell them. Ratnesh Yadav says "Our business model builds an ecosyostem around every plant where every one benefits and growth becomes inevitable….At every step every one is making profit." Added benefits of electrification are that children can study at home after dark, shops can stay open later, crime has decreased, and even snakebites have become rare, because snakes don't like the white light of CFLs.

To speed up the process of bringing electricity to the billion people who don't have it, leading off-grid entrepreneurs and NGOs asked the world's nations to commit $500 million to this goal at the Rio+20 Earth Summit in June, 2012. However, by most accounts Rio+20 was a washout that did not further either renewable energy or developing countries.

(For comparison, "Marvel's the Avenger" earned $500 million at the boxoffice within 23 days, Tiger Woods' estimated net worth is $500 million, and Abbott Labs was fined $500 million for illegally marketing Depakote for off-label uses.)

However, one of the states of India, Bihar, has the potential to become the model for developing countries that want to develop electricity in the cheapest, fastest, and most sustainable way possible. With 100 million inhabitants Bihar is larger than most countries. Bihar now has the most inadequate electric power system in India, and 82% of its inhabitants have no electricity. Chief Minister Nitish Kumar made a single campaign pledge for his second term in office: bringing electricity to the 82 million people who lack it.

Kumar would build more coal plants, but the price of coal is skyrocketing in India, and coal plants take at least 5-7 years to come on line. Renewable energy makes the most sense for Bihar, which can build a new system without threatening existing industries. The Greenpeace blueprint is to build mini grids that will carry the power from home solar systems alongside electricity from small scale power plants that use biomass, biogas, or waterpower. These mini-grids can eventually connect to a smart grid.

Visionaries such as Amory Lovins have been advocating such a decentralized system, with its micro grids and smart grids, for the United States. Bihar could show the way for us in the industrial world too. +++

.

Chapter 4
War, Total War, and Democide

Probably, no nation is rich enough to pay for both war and civilization. We must make our choice; we cannot have both.
> ~Abraham Flexner, reformer of American medical education, 1866-1959

Only a handful of the past 3,000 years enjoyed a world at peace. There was always an organized conflict somewhere, wreaking suffering and death. In the past 500 years, some 150 million people have died in wars, three-fourths of them in the 20th century.

War is an old, ingrained human habit—one could call it an addiction. Pushers and enablers have agendas (political, economic, and personal power) which they disguise with high-sounding words. Most people don't think about war until it descends on them, when they dutifully put on yellow ribbons and flag pins, and send off their sons and daughters to kill and be killed.

But—we do have choices. We could learn how to resist these mindless, repetitive bouts of destruction. War is not hard-wired in us. Let's look first at what humanity as a whole has done, and is doing to keep us free from war. And let's consider this—do we get an A for effort?

In 1929 the Kellogg-Briand Pact renouncing war as a means to resolve conflict was signed by 62 nations, including Japan, Italy, Germany, Great Britain, France, and the United States. Yet within a decade all these powerful nations were at war. Seventy years later, the United Nations declared 2001-10 would be the Decade for the Culture of Nonviolence. However, U.S. wars in Afghanistan and Iraq quite overshadowed this plan. The U.S. media did not mention it and most Americans never heard about the decade devoted to nonviolence.

Since the middle of the 20th century, with a multitude of ongoing technological advances, the nature of war has changed. War is now an existential threat. It is increasingly possible for warring humans to destroy civilization or even the human species itself, along with many other innocent species as collateral damage. Survival is the first issue.

While nuclear weapons threaten the whole species, smaller wars in smaller countries not only kill and maim but also destroy people's land and livelihood so that they barely subsist and society cannot advance. Armed conflicts are increasingly likely to occur in the poorest countries and it tends to keep them poor. Every year about a third of a million people are killed in military conflicts by guns, mortars, grenades, and other weapons classified as 'small arms.' In fact, these light weapons now cause 90% of civilian casualties. These smaller wars that hinder the well-being and development of poorer countries are a second issue.

Another kind of loss is in the world's economy. Steve Killelea, businessman founder of the Global Peace Index, estimates that nine percent of the world's economic output—almost $5 trillion in 2009—was lost because of internal and external conflicts across the world. Killelea says, "Businessmen believe business improves in conditions of peace….There is a very, very strong correlation between peace and wealth." Violence robs the world of resources needed to further human welfare. Designers of the GPI calculate that today, $2.4 trillion or 4.4 percent of the global economy depends on violence. But if peace broke out everywhere, the economic bonus every year would be $7.2 trillion.

For centuries people have been predicting the end of mass violence, because war doesn't make any sense. There is, however, no one quick fix. The problem needs a lot more of us working harder at it. Our first obstacle may be confusion about what we mean by war, in this

year of 2012. There are several different kinds of mass violence, and they may require somewhat different strategies to prevent:

Interstate Wars pit large nations against each other, often with allies—World War I and World War II are prime examples. Since WWII, this type of large-scale war has not recurred. However it conceivably could return in a different version involving participants such as Pakistan, India, China, Israel and Russia—all nuclear-armed.

Total War is an armed conflict in which at least one of the belligerents uses all available weapons and resources, engages its entire population in the war effort, and attacks civilians of other countries by means such as large-scale bombings, chemical warfare, destruction of infrastructure, or starvation. By mid-19th century, scholars noted that total war was a class of warfare separate from those limited wars in which two uniformed armies engage in specific battles. The name came later, from German General Ludendorff in his World War I memoir *Der Totale Krieg* (*The Total War*) published in 1936.

World War I was the first example of industrialized warfare. Using industrial production methods and more advanced technology creates more casualties, especially of civilians. Total wars can be conflicts such as World War I and II, but also Iraq vs. Iran 1980-1988. Widespread civilian casualties now accompany most wars of all types and greatly outnumber military deaths.

Imperial wars of more developed nations against smaller, weaker nations often use some pretext such as the domino theory, to stop drug trafficking, asserting that the invaded country (for instance Tibet) was once part of the invading country, or to destroy suspected stockpiles of WMD. Usually the weaker nation conducts a guerrilla war, which is the only strategy it can employ, in what the Pentagon calls "asymmetric warfare." Guerrilla wars are very costly in casualties for the defending country and often involve brutal tactics and atrocities on both sides.

Intra-state wars include proxy conflicts like those that occurred during the Cold War in Afghanistan, Angola, and several countries in Central America. This also includes civil wars and other internal fighting based on ethnic and religious differences. Intra-state wars have dominated armed conflicts since World War II.

Democide is not a form of war but "the murder of any person or people by a government, including genocide, politicide, and mass murder" according to American political scientist R.J. Rummel, who reintroduced the term and studied the concept. The word is new but its history is as ancient as are the various forms of war listed above and the casualties of democide are at least as large as those of war.

For most Americans, the prototype of war is the Second World War, still within living memory and the most destructive war in history (over 60 million dead). We rightly dread the specter of World War III—a total war like WWII, but but which could use even more frightening technology that would create an existential threat to the human species and planet.

However, WWII is not the model of modern war in its current form. Since the peak of Cold War conflicts in the early '90s, wars of nation vs. nation have been diminishing in number and casualties, while civil wars and other internal conflicts have taken center stage, almost all of them fought in developing countries. There have been 111 wars since 1945, killing an estimated 50 million or more people. Only nine of them pitted one nation against another. Adding up the many smaller conflicts we find almost as many dead as in the two world wars. China, Vietnam, the Democratic Republic of Congo and Sudan suffered great casualties during this period.

In general these intra-state hostilities are little known in the United States. Most occurred in former European colonies liberated abruptly, unprepared for independence by their former rulers, and formed with many separate cultures in one nation. For instance, Nigeria, when Britain granted it independence in 1960, had a population of 60 million people that consisted of nearly 300 differing ethnic and cultural groups.

About 90 new states were formed within a few decades. The new countries usually lacked an administrative structure and a productive economic base. Their governments, quite fragile and sometimes unable to defend themselves from aggressive neighbors or from the strains of diverse ethnic and religious groups crowded within one nation, were often captured by corrupt and authoritarian leaders, leading to civil strife. The Cold War was responsible for much of the bloodshed as political and ideological conflicts between the U.S. and the U.S.S.R. were fought by proxies in these other, smaller and poorer countries with weak governments.

Though brutal and tragic, smaller-scale wars don't lead to as many casualties as wars conducted with advanced weapons. At least that is the accepted wisdom. A minority of peace researchers doubt the decline in wars and war casualties. Mark Harrison and Nikolaus Wolf maintain that wars have been increasingly frequent ever since 1870. Ziad Obermeyer and colleagues find "no evidence to support claims of a recent decline in war deaths." Columbia Professor Richard Garfield says that by counting only violent deaths, the data underestimate deaths from war-related disease which often outnumber violent deaths in poor countries. (And I wonder if the figures include delayed deaths from land mines and cluster bombs, destroyed infrastructure and blasted agricultural land, or infant mortality from DU weapons.)

While such limited wars (limited in the sense of being non-nuclear) may not threaten human survival, they are a terrific drag on humanity's thrival.

Is War Going Away?

Annual war-related casualties have dropped more than ten-fold since the cataclysmic first half of the 20th century—even as the world's population has surged.
~John Horgan, *The End of War*, 2012

Three positive trends lead some to hope that the era of human warfare finally may be coming to an end. There have been no megadeath "world wars" for almost 70 years; there has been no use of nuclear weapons during that time; and total war casualties have been greatly reduced over the last two decades (accepting the majority view).

Several reasons may account for the decline in numbers of wars and casualties. Democratic peace theory holds that democratic nations rarely have wars with each other. Between 1955 and 2008, 103 nations made the transition to democracy. The 2011 report by Freedom House counted 66% of nations as "free" or "partly free," although political scientist Jay Ulfelder noted only 62 of the 103 new democracies lasted longer than five years. Emerging democracies may have an elected parliament but lack legal institutions or safeguards such as a free press. Nevertheless, the great increase in number of democracies seems to have had a restraining effect on wars.

Another contribution to increasing peace may be growing gender equality. Women voters and government leaders tend to be less supportive of war. Other reasons proposed for the decline in wars are prosperity, international trade, and even increasing life expectancy. The idea is that if you've got more to lose, you're less likely to risk it. That would help to explain why the countries most wracked by war in recent years are those in the bottom 40% of GDP.

However, if we grant that wars have been declining for 20 years, is 20 years long enough to demonstrate the beginning of the end of war?

In the past there were several long periods of relative peace because of the predominance of one imperial authority or superpower. The Pax Romana lasted from 27 BC to 180 AD, the Pax Hispanica from 1596 to 1621, and the Pax Britannica from 1815 to 1914. There were many long periods of peace in China, most notably the Ming Dynasty, ruling from 1368-1644, and described as "one of the greatest eras of orderly government and social stability in human history." None of these periods was free of conflict—for instance, the British fought several Opium Wars with China during the Pax Britannica. And the price of these periods of peace was imperial rule by one superpower or another. Some call the present era since 1945 the Pax Americana, although as in previous history this has not been exactly a period of peace. The United States has in fact instigated five major imperial wars during the postwar period: Korea, Vietnam, Iraq twice, and Afghanistan.

We certainly hope that we are finally kicking the habit of war, or at least wars between large, modernized nation-states. But as history goes this is a very new trend, which some exaggerate in their ideological attempt to glorify the Pax Americana, the capitalist enterprise, or human progress in general. Others just hope that the trend will last.

Despite a decline in big wars, the world's nations continue to devote an average of 5% of GDP to military preparation, and to develop ever more baleful weapons systems. As long as the armies and weapons are out there, some degree of probability exists that they will be used. Looking ahead a century or more, Ike Jeanes uses statistical tools and combines a large number of factors for a unified view to estimate the probability of nuclear war in any given year. Jeanes' formula forecasts with 95 per cent certainty the intentional or accidental use of a nuclear weapon by 2075. The longer we wait, the more likely it is that the world will see nuclear warfare. If not the escalation of some current war, then the next one or the one after that is likely to go thermonuclear and wipe out half a continent.

One factor leaders tend to ignore is accidental or unauthorized use of nuclear weapons, which Jeanes says is perhaps the greatest threat to nuclear peace. There have already been several close calls. Accidents can involve command failure, control failure, communications failure, or false intelligence. While these failures have not yet resulted in an accidental nuclear war, we can't bank on our luck continuing indefinitely. A related problem is great power in few hands. Jeanes says:

> In some instances the decision-making process and execution of nuclear attack can be carried out by one person, or a small group of people. Thus individual or small group failings—intellectual or psychological—more closely approximate nuclear war initiative than do group decision-making processes in conventional war, which often include the activities of millions and the decisions of many. In this regard, nuclear attack can present greater danger than conventional war.

We try to reassure ourselves that since weapons have now become too dangerous, nations and their reasonable leaders will forbear to use them. This doctrine of Mutually Assured Destruction overlooks clear evidence that many world leaders are not reasonable or even sane. Nor do cold reason and morality always go together.

With current capabilities, in a thermonuclear war one nation or bloc of nations could virtually obliterate another—perhaps an entire subcontinent. The side-effects would travel across the planet and down through the years, poisoning land and water, causing mutations, leading to a nuclear winter that destroys most of the world's agriculture. Many species would die out. If

mankind survived, it would be at a pre-civilized level. And that does not take into account non-nuclear warfare: near-future capabilities such as Space War, sophisticated biological warfare, or GNR weapons—combinations of genetic engineering, nanotechnology, and robotics.

My intention here is not to depress you but to galvanize you into action. While we currently see an anti-war trend, now is the time to take advantage of it. Knowing that our children and grandchildren are in danger, people everywhere can join in an intervention to end this ancient, self-destructive behavior. John Horgan says that "When we start believing that we can end war, we're already well on our way."

Remember the Civilians

And we took all his cities at that time: there was not a town which we took not from them, sixty cities, the whole region of Argob, the kingdom of Og in Bashan.
All these cities were fortified with high walls and with gates and bars, and there were also a great many unwalled villages.
And we utterly destroyed them, as we did unto Sihon king of Heshbon, utterly destroying the men, women, and children, of every city.
~Deuteronomy 3:4-6

Modern warfare tends toward total war, with civilians increasingly vulnerable. Since the mid-20th century, for every soldier killed in war, 10 civilians died. Diana Francis, former president of the International Fellowship of Reconciliation, says flatly: "The selective killing of military personnel, without harm to civilians, cannot be achieved in modern warfare." In *War Is a Lie*, David Swanson asks "Are a million Iraqis collateral damage and 4,000 Americans heroic casualties? Or are all 1,004,000 victims?"

The populations of the United States, Canada, and Australia have been exceptionally protected from civilian risk in both world wars and other wars since. Lacking this widespread experience leads some of us to assume that wars are all about soldiers in battles far away. This unrealistic premise has consequences for public opinion and national policies. The criminal attack of September 11, 2001 appeared to be a mythic event unique in history—because it happened to American civilians. Meanwhile the six to seven million people, mostly civilians, who died in Korea, Vietnam, and Iraq, are all but forgotten.

As we see from the Deuteronomy quote, total war is hardly a new invention. Some centuries after those biblical accounts, Romans demolished the city of Carthage and sold 50,000 surviving Carthaginians into slavery. In medieval sieges the attackers starved, raped, and killed the people of many walled cities. In 1258 the siege of Baghdad by the Mongols left Baghdad totally destroyed and the Mongols massacred as many as a million inhabitants. It took centuries for the city to recover, and the event marked the end of the Islamic Golden Age.

Historians estimate that the Thirty Years' War (1618-1648) killed 15 to 40% of the civilian population of Germany because of armed conflict, famine, and disease. The cruelty and rapacious greed of mercenary soldiers accounted for much of the destruction.

Since WWII, the medieval siege mentality has reappeared in wars in less developed countries. Cornell professor Milton Leitenberg says "Food denial has become an explicit and very significant strategic policy in several wars and conflicts in recent decades (Biafra, Angola, Ethiopia, Somalia, Cambodia, and Sudan). It accounts for some of the highest mortalities, and that mortality is, of course, overwhelmingly civilian."

Modern embargos are also a kind of siege. The UN Security Council imposed a near-total financial and economic embargo on Iraq from 1990 to 2003. According to Wikipedia, "Estimates of excess civilian deaths during the sanctions vary widely, but range from 170,000 to over 1.5 million." Another cause of deaths in Iraq in the period between 1991 and 2003 was destruction of civilian infrastructure during the Gulf War. Allied bombing raids totally destroyed 11 of 20 major power stations and 119 substations, so that by war's end, electricity production was only four percent of pre-war levels. Bombing also destroyed dams, pumping stations, and many sewage treatment plants, "turning Iraq from one of the most advanced Arab countries into one of the most primitive."

It's important to keep in mind that modern wars are not just about soldiers. We must learn to resist the peer pressure and propaganda of war fever; to look past euphemisms, and media omissions that gloss over the human story behind 'collateral damage.' While the loss of any soldier is a tragedy, so are civilian casualties that greatly outnumber battle deaths in armed conflicts large and small. It makes little difference whether the child is one of 'us' or 'them.' Let us remember and commemorate all those innocent people who had no desire for glory, who did not plan to "serve their country" but who died anyway.

The Geneva Conventions

In order to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives.
~Article 48, Protocol I to the Geneva Conventions

The Geneva Conventions are the human community's attempt to limit the worst excesses of our wars. Modern humanitarian law began in 1864 with a meeting that negotiated the first international treaty of the Geneva Convention. These treaties were from the beginning strongly tied with the International Red Cross and Red Crescent Movement. (The Red Crescent is an alternative symbol used in Islamic countries since 1876.) The Geneva Conventions are composed of seven treaties or protocols negotiated since 1864, with a major revision in 1949 which was ratified by all 194 countries. The 1977 Protocol particularly relates to the rights and protection of civilians caught up in wars. (Chemical and biological weapons are covered by a different set of treaties, the Hague Conventions.)

Knut Dormann, legal director of the International Committee of the Red Cross (ICRC) describes the treaties as the cornerstone of International Humanitarian Law (IHL). "They contain the essential rules protecting persons who are not, or who are no longer, taking a direct part in hostilities when they find themselves in the hands of an adverse party: namely, the wounded and sick, the shipwrecked, prisoners of war, civilian internees, civilians living under occupation and civilians in general." Millions have been spared the full horrors of war because of these humanitarian agreements.

Yet as the conditions of war change, treaties need updating. Some doubt whether the Conventions can still guarantee a minimum standard of treatments for detainees who are under investigation or accused of terrorist activities. Mr. Dormann notes problems such as renewed use of mercenaries: "States cannot absolve themselves of their obligations and responsibilities under International Humanitarian Law by resorting to the use of private military and security

companies." Drone strikes threaten the international legal system that has developed over the past 60 years, according to Christof Heyns, UN special rapporteur on extrajudicial, summary or arbitrary executions. He fears more states may follow the U.S. example of targeted killings. Heyns says secondary drone attacks on rescuers constitute a war crime.

Unfortunately it seems that most people in violent countries such as Afghanistan, Colombia, Liberia, and Haiti either do not know about the conventions (more than half) or say they do not work, according to a poll conducted by the International Committee of the Red Cross. The vast majority of respondents disapproved of attacks on enemy fighters in villages or towns where civilians were likely to be killed, and of attacks on health workers and ambulances.

The ICRC might also conduct a poll in the United States, for I suspect that many of us here do not know much about the Geneva Conventions. Hopefully it is a part of U.S. military training at all levels. Since American television goes around the world, perhaps the ICRC could arrange for public service announcements explaining the main provisions of the Geneva Conventions, making sure to include the United States in this campaign.

Uniting Nations for Peace: By the late 19th century it was an idea whose time had clearly come: that the world's nations must cooperate to promote peace. Before the UN there was the League of Nations; before the LON there was the Inter-Parliamentary Union, formed by two peace activists in 1889 to further the process of solving international disputes by arbitration. The IPU still exists and the national parliaments of 157 countries are members (not the United States, however). IPU cooperates with the UN but isn't officially part of it. Even earlier, American pacifist Elihu Burritt organized the International Congress of the Friends of Peace held in Brussels in 1848. The congress adopted resolutions urging limitation of armaments.

International peace organizations learned from each other. For instance, the Women's International League for Peace and Freedom (WILPF) was founded at an International Women's Congress at The Hague in 1915. WILPF hammered out a list of "18 Final Recommendations to End the War and Foster Peace" and submitted these to heads of state. U.S. President Woodrow Wilson evidently made good use of his copy because the "14 Points" of Wilson's 1918 proposal for world peace and the basis for the League of Nations has many similar principles such as self-determination of nations, use of arbitration in international conflicts, disarmament, and democratic control of foreign affairs rather than secret diplomacy.

During World War I a growing number of political leaders and public intellectuals were calling for something like the League: Jan Christian Smuts, soon to be Prime Minister of South Africa; former U.S. President William Howard Taft; philosopher Bertrand Russell; British author H.G. Wells; the newly founded League of Women Voters; and many others. The League was formed in 1919 after the devastation of World War I, a conflagration which was truly international in scope, involving 100 countries (though some were colonies of others, and some simply declared war without contributing troops). The war had produced horrific numbers of casualties—about eight million soldiers and 10 million civilians—besides many other deaths from disease, famine, and the civil war in Russia. Anti-war sentiment was high across the world. The vision and declared mission of the League was to make sure war never broke out again.

The League of Nations had major weaknesses, notably the failure of the United States to join it. Despite wide public and Congressional support for his plan, President Woodrow Wilson, in ill health, was unable to prevail over powerful opponents such as Republican Senators Henry Cabot Lodge and William Borah. Isolationism carried the day. Another League mistake was to keep Germany and Russia from joining in 1919 (they did so later). That left only Britain and

France as the League's two most powerful members, although they were recovering from heavy casualties and economic losses in the war.

Another weakness was that the League's Council members—which by 1936 numbered 15—all had veto power. Unanimity or consensus is desirable in many situations—not so much with 15 representatives of states protecting their national interests.

Under the League's Covenant, it had three "sanctions" with which to settle a dispute between nations. First, it called on the states to discuss their dispute in the League's Assembly, which would then make its decision. The League could warn an aggressor nation to leave the other's territory (verbal sanctions). If one or more states in the dispute ignored the Assembly's decision, the League could introduce economic sanctions, a boycott of trade with the aggressor nation. The third and last resort was military sanctions to enforce the League's decision, but the League had to depend on member nations that would not or could not provide back-up. Also, the more powerful nations sometimes showed bias and broke their own rules; for instance they not only allowed Poland to invade Russia in 1920, but Britain and France (along with the United States, a non-member) also made a failed attempt to invade Russia.

Encyclopedia.com summarizes the League's virtual demise after 15 years:

> The decline of the League of Nations in the 1930s reflected the unwillingness or inability of Britain, France, and the United States to oppose the increasingly nationalist-imperialist and militaristic trajectories of Nazi Germany, Fascist Italy, and imperial Japan….The crisis that clearly signaled its waning influence in the 1930s was the invasion of Ethiopia by Italy in October 1935….In a somewhat circular fashion it is clear that the lack of cooperation and collective action between nation-states that encouraged political leaders to call for a League of Nations in the first place was the very thing that undermined the league once it was created.

While the League is commonly dismissed as a failure it actually achieved some notable arbitration successes in the 1920s. For instance the LON settled a Swedish-Finnish dispute over the Aaland Islands (1921), the division of Upper Silesia between Germany and Poland (1922), and a conflict between Greece and Bulgaria (1923). It also laid the groundwork in many important areas such as humanitarian aid to refugees and campaigns against disease. Many of these programs and agencies were carried over to the United Nations in 1946.

Keeping the Peace: Whether LON or UN, the three most important direct efforts to preserve peace are 1) arbitration of disputes 2) negotiating and supervising disarmament; and 3) actively maintaining a truce between warring nations or communities, especially by an international military force (peacekeeping).

Arbitration proceeds through several avenues. The PCA or Permanent Court of Arbitration was established by treaty in 1899 during the Hague Convention for the settlement of international disputes. It is open to all countries but only works when nation states agree to have their cases settled by an arbitrator.

To resolve disputes between nations, the League of Nations formed the permanent Court of Justice. In 1945 this was succeeded by the International Court of Justice under the UN charter, which operates very much like the earlier court. Composed of fifteen judges of different nationalities elected by the General Assembly and the Security Council, the World Court bases its decisions on treaties, universal principles of law, international customs, and precedent from similar cases. It has contributed significantly to the development of international law, but it settles only a handful

of cases each year and has not lived up to expectations that it would be the "principal judicial organ" for settling disputes among states.

The World Court has jurisdiction only over those nations which have agreed to this jurisdiction. According to Bingbin Lu, Korean law expert, only 63 nation-states have recognized the compulsory jurisdiction of the Court (with or without reservations). The United States withdrew from the Court's compulsory jurisdiction in 1986. Also, a specific case can only be submitted to the Court with consent of the States concerned. And the Court has no means to enforce its decisions. Lu says the main reasons for the ICJ's lack of influence are first of all, the limits on jurisdiction, its "relatively rigid procedure" and the lack of enforceability of its decrees.

Another cause of the World Court's limited effectiveness, according to Lu is that "major issues of peace and security between the more powerful States have rarely been submitted to the ICJ, as most governments tend to consider the recognition of the jurisdiction of the court as infringing on their sovereignty." He notes that while trade organizations such as WTO have compulsory jurisdiction, the World Court does not. It is interesting that the United States, for instance, is willing to accept the loss of sovereignty involved in trade agreements but not in courts of law (which are much more transparent).

Lu notes that today a number of other international Courts and Tribunals such as the International Tribunal for the Law of the Sea and the International Criminal Court can hear more kinds of cases and help make up for the deficiencies of the ICJ. In most cases, contentious disputes come before the UN Security Council or General Assembly rather than the various courts. According to the UN Charter, Chapter VI, Article 33:

> The parties to any dispute, the continuance of which is likely to endanger the maintenance of international peace and security, shall, first of all, seek a solution by negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements, or other peaceful means of their own choice.
> The Security Council shall, when it deems necessary, call upon the parties to settle their dispute by such means.

The Security Council does have enforcement power. The UN Charter allows it, as a last resort, to call for economic sanctions and even military measures such as blockades. But the Council's structure limits its ability to settle disputes that involve the most powerful states. In a formalization of realpolitick, the UN Security Council has five permanent members (United States, United Kingdom, France, Russian Federation, and China) representing the great (and nuclear) powers of today, and each retains veto power over any decision of the Security Council. President Truman said that without this veto power, the Senate would never have allowed the United States to join the UN. This pragmatic plan makes the UN more "successful" in some ways but less so in others such as its inability to prevent or intervene in wars initiated by one of the five permanent members, for example the USSR in Hungary, France in Algeria, the four large-scale wars begun by the United States since 1950, or China's occupation of Tibet.

By 2010, one or a combination of the five permanent members had vetoed 215 resolutions on substantive issues. Almost half of vetoes were by the U.S.S.R. before 1965, while since 1972 the United States has used its veto more than any other permanent member. For instance, in 2007 the U.S. was the only nation to veto all 15 resolutions brought forward. These vetoes included a resolution that would give security assurances to non-nuclear weapons states that nuclear weapons would not be used against them, and another to support the Comprehensive Test Ban Treaty, to permanently end all testing of nuclear weapons.

Although the Security Council's veto power severely limits the UN's ability to restrain any of its five most powerful nations in their own breaches of the peace, some believe that the UN Charter allows the General Assembly to overcome this problem.

The General Assembly, much as the Parliament in the League, is the forum in which representatives of all 193 member nations can discuss important international issues including disputes. Resolutions passed by the UN General Assembly do not have the binding force over member nations that the Security Council does, except that under the 1950 'Uniting for Peace Resolution' (#377) the Assembly may take action if the Security Council fails to act because of a veto by a permanent member. In a situation where there appears to be a threat to the peace, breach of the peace or act of aggression, the Assembly can consider the matter immediately and by two-thirds vote make recommendations to Members for collective measures to maintain or restore international peace and security.

This Uniting for Peace procedure has been used ten times since its adoption, such as during the Cold War when the USSR invaded Hungary. It was attempted in 2003 concerning the U.S. invasion of Iraq but stalled when the United States warned member nations: "the United States would regard a General Assembly session on Iraq as unhelpful and as directed against the United States....The staging of such a divisive session could do additional harm to the UN." Small nations feared being put on the U.S. enemies list. In this case the General Assembly could not prevail over superpower intimidation.

Disarmament

If all nations will agree wholly to eliminate from possession and use the weapons which make possible a successful attack, defences automatically will become impregnable and the frontiers and independence of every nation will become secure.
~U.S. President Franklin Delano Roosevelt, message to World Disarmament Conference, 1932

Disarmament has been a major concern of peace-seeking leaders for over a century, and especially after World War I. All the major powers except the United States committed themselves to disarmament in both the Treaty of Versailles and the Covenant of the League of Nations. The Covenant called for "reduction of armaments to the lowest point consistent with national safety." Having suffered enormous casualties in a pointless conflict, the world's people themselves called for disarmament.

Many blamed the war on profiteering munitions makers and the rapid arms race that had occurred between 1900 and 1914 when all the major powers increased their armies and improved their battleships. France had increased military spending by 10%, Britain by 13%, Russia by 39%, and Germany by 73%. Other causes of the war included competition for new colonies, a system of multiple mutual defense alliances between two or a few nations, militarism, rampant nationalism, and a succession of crises in the early 20th century that raised international tensions. However, it was evident that certain businesses had become rich and powerful from preparing for war, and the 1936 Nye Report of the U.S. Congress and Senate documented that some munitions companies deliberately sabotaged peace efforts after World War I.

The campaign for disarmament between the two World Wars was perhaps the greatest international non-governmental movement the world has seen so far. Global Security claims that this campaign "mobilised organisations that claimed a combined membership as high as half of the population of the world at the time." There were many valiant attempts to organize world

disarmament at the level of governments, but very few successes. Two treaties managed proportional arms reduction, not disarmament.

The term *disarmament* can mean the elimination of certain types of weapons or of all weapons whether nuclear or conventional. Disarmament can be unilateral, bilateral, multilateral, or universal. What we mean here by 'disarmament' is a phased process of mutual, verifiable elimination of stockpiles, by agreement and not something that is forced on a defeated nation. "General and complete disarmament" as used in the UN means "Reductions of armed forces and armaments by all states to levels required for internal security and for an international peace force." The ideal is a world-wide and proportionate reduction of arms to the level needed for civil defense. The weapons to be eliminated are those which in F.D.R.'s words "make possible a successful attack" which are for the most part weapons of mass destruction and also certain weapons especially harmful to civilians such as land mines and cluster bombs.

The ultimate goal of the UN, according to Sergio Duarte, UN High Representative for Disarmament Affairs, is the total elimination of all weapons of mass destruction, whether nuclear, chemical, or biological; and the reduction or limitation of conventional arms. He defends this two-fold aim:

> The twin goals of eliminating WMD and regulating conventional arms are not at all unrealistic, utopian, or impractical, as some critics have claimed…. States have chosen to seek the elimination of [WMD] not simply out of philanthropy, but because they believe this approach will best serve their security interests. Most of the world is quite aware that alternatives like perpetual reliance on deterrence, missile defense, or preemption will offer far less assurances of security than the careful and deliberate elimination of such weapons.

Disarmament in the full sense means more than eliminating offensive weapons. Another step is to eliminate national military establishments, that is, the standing armies that U.S. founders also spoke against. James Madison said "A standing army is one of the greatest mischief [sic] that can possibly happen." Many consider professional armies to be dangerous to their own societies. Prussia was described as "an army with a state, in which it was temporarily quartered." Political commentator William Pfaff says much the same is true of the U.S. army today. Disarmament also involves economic conversion from weapons-making to peaceful production.

However, history shows different priorities. The Oxford Dictionary of Politics notes:

> In practice, states have usually concentrated on the less utopian goal of seeking agreement on partial measures intended to cover particular categories of weapons, or applying to designated geographical areas (as in the case of nuclear-weapon-free zones). And in this kind of strictly limited context the goal has sometimes been abolition, sometimes limited reduction, sometimes a freeze....Such measures may not even be intended to be a first step towards any kind of reduction or abolition. For the aim may simply be to promote stability in force structures. Hence a new term to cover such cases has become fashionable since the 1960s, namely, arms control.

In 1925 the League appointed a commission to prepare for a disarmament conference. There were several such conferences, but they all foundered on the contradictions between professed ideals and perceived national interests. At the 1927 conference, the great Soviet diplomat Maxim Litvinov called for complete and immediate disarmament, throwing all the delegates into confusion. They took his proposal to be a cynical ploy and quickly found arguments against the idea. One major reason for the repeated failure of negotiations was that

Britain refused to reduce naval strength, while France, fearing a German invasion, refused to reduce ground troops.

In the face of these failures of disarmament, U.S. Secretary of State Frank Kellogg and French Foreign Minister Aristide Brand then jointly denounced war in the 1928 Kellogg-Briand Pact, eventually ratified by 65 nations who promised not to use war to resolve "disputes or conflicts of whatever nature or of whatever origin they may be, which may arise among them." With no enforcement mechanism the treaty had little practical effect, but it helped establish international norms and law, including the legal basis for the Nuremberg Trials.

The last World Disarmament Conference in Geneva met from 1932-1934 with 60 nations attending, including the United States. This conference could not overcome disagreements over definitions of "offensive" and "defensive" weapons, and the polarization of France and Germany. The Conference broke down when a newly re-arming Germany withdrew both from the Conference and the League in 1933.

Ironically, the only arms treaties between the two world wars were negotiated outside the League. In 1921 the United States convened the Washington Conference setting a ratio for tonnage of warships among nine seafaring nations. (Great Britain and the U.S. were allowed the biggest ships and guns.) A similar London Naval Conference and treaty occurred in 1930. These treaties were clearly about "arms control" rather than disarmament. Another movement in the United States called for some sort of arms embargo, leading to passage of the Neutrality Act of 1935 and later versions that imposed an embargo on arms to all belligerents rather than only to aggressor nations: isolationism rather than collective security. The Act had some loopholes and was selectively applied. Meanwhile, some powerful U.S. businesses managed to trade with fascist countries up to World War II (and possibly even during it).

The focus of disarmament, ever since Hiroshima/Nagasaki and the 1946 founding of the UN, has been nuclear disarmament. Instead, the policy of arms control arose during the Cold War. Its advocates argued that disarmament was not a realistic goal. They pointed to the example of Germany, which was disarmed by the victors of World War I but became a military power once again in the 1930s. Another argument against disarmament was the absence of guaranteed verification, allowing an adversary to cheat. *Realpolitick* policy-makers sought to create a stable balance of power using treaties between potential adversaries to prevent arms races and to reduce the likelihood and scope of war. These pacts usually impose limitations on military capability but do not seek to eliminate any type of weaponry.

Important arms control treaties, all between the United States and U.S.S.R., are ABM (Anti-Ballistic Missile Treaty) in force from 1972 to 2002, when the United States withdrew from it; SALT I (Strategic Arms Limitations Treaty) in force from 1972-1977; SALT II, agreed to in 1979, never ratified but honored anyway; and START I and II (Strategic Arms Reduction Treaty) 1992 and 1993. Despite these treaties, a multi-trillion-dollar arms race continued. The 1972 Biological Weapons Convention banning biological weapons is the only postwar example of true disarmament of an entire weapons category.

Negotiations to reduce arms are mainly in the hands of the nuclear powers, and the rest of humanity has had to depend on whatever wisdom these nations possess. Definite progress has been made, in and out of the UN framework, such as the Nuclear Non-Proliferation Treaty (NPT). Fortunately for the human race, the potential of large-scale nuclear conflict or accidental discharge has not yet turned into reality, but the extreme slowness of nuclear disarmament is extremely disappointing and extremely dangerous.

The American public was once urgently aware of the need for nuclear disarmament but currently is not. Now that the Cold War is over, most people see the problem mainly as the threats posed by Iran and North Korea, or the acquisition of nuclear weapons by terrorists. However the dangers are much broader than that. Let us defer the discussion of what the American public can do about nuclear disarmament/arms control to the following chapter.

Peacekeeping

Peace is a fulltime job. It's protecting civilians, overseeing elections, and disarming ex-combatants. The UN has over 100,000 Peacekeepers on the ground, in places others can't or won't go, doing things others can't or won't do. Peace, like war, must be waged.
~George Clooney, American actor and activist

The UN's reason-for-being, after World War II, was to prevent war. Some scholars such as Joshua Goldstein give credit to the UN for the noticeable decline in armed conflicts since the end of the Cold War. UN agencies have prevented armed conflict at its roots by overseeing over 300 treaties that strengthen international law. The UN has negotiated 172 peaceful settlements to regional conflicts. Many UN achievements such as reducing child mortality, improving fisheries, and increasing female literacy also contribute to peace but through a long, hidden causal chain.

However, the UN's most visible, dramatic, expensive, and problematical efforts to preserve peace are its peacekeeping missions (Department of Peacekeeping Operations or DPKO) set up by the General Assembly in 1956. Since then, the UN has completed 53 peacekeeping missions with 16 missions still underway. Depending on circumstances, DPKO is charged with supervising ceasefires and the withdrawal of opposing forces, protecting civilians, delivering or aiding the delivery of humanitarian aid, the disarming of warring factions, repatriation of refugees, supervising elections, training police and judiciary, and other peacebuilding activities.

Some UN peacekeeping missions such as Cambodia, Liberia, and East Timor are considered successes. Some missions such as Srebrenica and Congo are judged failures. A Rand Corporation study in 2005 judged that UN peacekeeping efforts were more successful than unilateral, U.S. nation-building attempts: seven of eight UN case studies remained at peace but only four of eight U.S.-led examples. The researcher, James Dobbins, said that the UN has a higher success rate because it "has done a better job of learning from its mistakes than has the U.S. over the past 15 years." Virginia Page Fortna of Columbia University's statistical analysis showed that UN peacekeeping reduces the recurrence of war by 50-85%.

There are many critics, however, including those who cry at each crisis "Why doesn't the UN *do* something?" They may not realize that UN peacekeeping operates under a number of constraints. First, the UN cannot undertake or support any missions on its own but only acts with the agreement of the five Permanent Members of the Security Council.

Second, peacekeeping missions are sent only with the consent of the nation or nations concerned. They are not enforcement actions.

Third, funds available for peacekeeping are minimal compared to the expectations and need. The DPKO yearly budget is $7.84 billion (2012), less than the military budgets of Poland or Mexico, and less than 1% of what the major powers pay for their military budgets. The United States, which is the single largest contributor to the peacekeeping budget at 27.17%, has in recent decades acquired the habit of not paying its dues in full. The peak of global conflicts during the early 1990s led to a much greater number of peacekeeping missions but in the same years,

powerful U.S. Senator Jesse Helms, Chairman of the Committee on Foreign Relations from 1994-2003, was hostile to the UN in general, constantly pushed for its "reform," and blocked payment of U.S. dues to the organization for several years. Other anti-UN legislators continued the harassment until the U.S. was $1.2 billion in arrears by 2010 (but has since paid back some of the shortfall).

The fourth major constraint has to do with personnel. UN peacekeeping armies (the blue helmets) are composed of soldiers mainly from less developed nations, with Pakistan, India, Bangladesh, and Nigeria sending the most. There are currently about 100,000 military personnel, from 115 countries. Some of them are poorly trained, and there have been several instances of widespread criminal and sexual misconduct by peacekeeping soldiers.

The skills required for peacekeeping are different from those required for combat. The more developed countries don't want to deploy their better-trained military troops in UN missions which have different aims and which lack the technical means and operational ability that they have come to expect. Also, they follow the lead of the United States which was so shocked by its losses in Somalia in 1993 (UNITAF was a coalition of UN members led by the U.S., not a regular UN peacekeeping mission) that it shunned direct involvement for the next two decades.

Jean-Marc Coicaud, author of *Beyond the National Interest* says the three Permanent Members of the Security Council who dominate the UN—UK, France, and especially the United States—often play an ambiguous role, both supporting and undermining the organization. He notes that "The UN is largely a U.S. invention." Successive U.S. administrations of both major parties publicly recognize that UN peacekeeping is in the security interests of the United States. Yet powerful U.S. politicians have repeatedly attacked the UN as ineffective, too costly, and/or a threat to U.S. national sovereignty. If there is any nation-building to be done, neo-conservatives prefer that the United States to do it unilaterally. Because of this political hostility, U.S. citizens in general have received a distorted view of the UN and little knowledge of what it does.

The United States has failed to ratify a number of important treaties that most other countries have joined, including six of nine human rights treaties such as Convention on the Rights of the Child (CRC) and Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), also the Mine Ban Treaty, Convention on Cluster Munitions, Law of the Sea, Kyoto Treaty, and the International Criminal Court. The lack of full support and especially of promised funding from the U.S. has impeded UN peacekeeping.

Coicaud points out other limiting factors. The lack of a decisive and unified leadership in the interactions among the Secretary General and the five Permanent Members of the Security Council means that instead of taking action early in a crisis, when it is most manageable, tensions are usually allowed to escalate into full-blown conflict before UN member states pay attention. Disagreements and delays in the Security Council contributed to failures such as the 1994 Rwandan Genocide. A report from Refugees International notes the cost of unclear mandates from the Security Council, for instance to protect civilians from violence without giving them the resources to do so.

The Refugees International report notes that "Peacekeeping missions routinely operate with a shortage of troops, civilian staff and equipment in some of the most insecure and logistically challenging environments in the world." In 2010, ongoing missions faced a 20% gap between troops and military observers who were authorized and those actually deployed; with police and civilian workers, the gap was 34%.

Refugees International and Steven Rocker of the American University's School of International Service agree that the United States can play at least one vital role in increasing the

effectiveness of UN peacekeeping: the training and equipping of peacekeepers, which has already begun through a State Department program, GPOI. Rocker says GPOI, now largely limited to Africa, needs expansion to South Asia and to the training of civil police. Since this training would not involve U.S. soldiers being on the ground in peacekeeping missions, it should avoid Congressional opposition. Rocker suggests that another area of U.S. involvement might be aiding faster deployment of peacekeepers and equipment, with advanced support such as engineers, heavy transport, and medical units.

Some want the UN to have its own peacekeeping army. A rapid reaction force could provide quick deployment in the event of imminent genocides. Two former U.S. ambassadors, Morton Abramowitz and Thomas Pickering, recommend that the five permanent members of the Security Council (including the U.S.) each provide "5,000 fully trained troops on an ongoing basis for peacekeeping missions authorized by the Security Council."

National Security Insurance: A divergent reform is offered by economist and futurist Hazel Henderson. She proposes a new perspective on national security in an age of global threats such as terrorism, drug trafficking, trade in small arms, and local conflicts that may become regional conflicts. No country by itself, not even a superpower, can deal effectively with global threats. 'Looking back' from the vantage point of 2050, Henderson sees the formation of the United Nations Security Insurance Agency (UNSIA). She foresees that a number of mostly smaller nations have joined in the UNSIA insurance pool early on. Their premiums fund a well-trained body of peace-keepers from a number of nations, as well as local networks of organizations working in humanitarian fields, conflict resolution, and truth and reconciliation hearings. (The plan could also include setting up a much more effective international network of response to natural disasters. The climate change we have already set into motion will undoubtedly produce more and more violent storms, heat waves, flooding, and other disasters for a number of decades, even if we make a rapid transition to renewable energy.)

Henderson suggests that the Security Council be expanded to include India, Brazil, Japan, Germany, and South Africa as permanent members—and the veto abolished. [A supermajority might replace unanimity.] Small countries could follow the example of Costa Rica, which abolished its army in 1949. This would free up funds to retrain soldiers for peaceful endeavors and invest in domestic needs. "Their military strategies [shift] toward buying peacekeeping insurance policies through UNSIA." She foresees that the United States and other holdout countries will ratify the International Criminal Court, allowing INTERPOL to arrest terrorists and aggressive tyrants and bring them to public trial. Then terrorism would no longer be the excuse either for military aggressions or domestic repressions.

$$$ £££ ¥¥¥ €€€

The industrial revolution of the 19th century created a lot more money, much of which nations promptly squandered on wars they could not have afforded earlier.
~Strategy Page, "The True Cost of War"

War costs money, a *lot* of money. Even without war, military buildups can bankrupt a country, and the Cold War hollowed out both Soviet Russia and the United States. Just to maintain a standing army is expensive, and maintaining America's 800+ overseas bases costs many a billion. Some developing countries spend a large part of GDP on their military to the

detriment of their people. (The western countries, especially the United States, are only too happy to sell guns and equipment to them, as well as to sub-national warring groups.)

The Congressional Research Service lists the cost (in current dollars) of past U.S wars. The Civil War cost $79.74 billion, with the Union spending 75% of it. World War I and the Korean War cost nearly the same: $334 and $341 billion. World War II was by far the costliest war, at $4.1 trillion. The Vietnam War and Iraq War (to 2010) cost, respectively, $738 and $784 billion.

But—these figures show only the cost to the United States, not other combatants in the world wars. The full dollar cost of World War II was about $20 trillion, five times what Americans paid out. The figures also omit economic costs to Koreans, Vietnamese, Cambodians, Iraqis, and their neighbors who received refugees and spillover violence from various wars.

Also, these figures only count military operations and do not include the continuing costs of wars in the form of interest payments on war debt—which is the core of national debt—or the costs of medical care, disability payments, and military pensions. Medical costs alone may double the initial cost of a war. In *The Three Trillion Dollar War*, economists Joseph Stiglitz and Linda Bilmes argue that including hidden costs, the Iraq War is likely to cost $3 trillion.

Military buildups can cost even more than actual wars. For instance the Cold War (1945-1996) cost the United States $13.1 trillion in 1996 dollars, according to the Center for Defense Information. This huge influx of money into the military created a powerful industry with influential lobbies. Webster's defines military Keynesianism as

> a government economic policy in which the government devotes large amounts of spending to the military in an effort to increase economic growth. This is a specific variation on Keynesian economics, developed by English economist John Maynard Keynes. Instances commonly offered as examples of such policies are Germany in the 1930s and the United States in the 1980s.

Stephen I. Schwartz, publisher of the *Bulletin of the Atomic Scientists*, says much of that Cold War spending was for nuclear weaponry: "United States expenditures for nuclear weapons and weapons-related programs between 1940 and 1996 consumed nearly $5.5 trillion in adjusted 1996 dollars." We may note that this investment also helped build influence of the nuclear power industry because there has always been a close relationship between the two.

Not only did Russia and the United States suffer economically from the long confrontation, so did a number of countries which suffered proxy wars between the two military giants.

A prime example of a costly military buildup today is North Korea, which spends up to 25% of GDP on its military. The North Korean People's Army is the fourth largest in the world with over a million men. At any given time about one-fifth of men from ages 17-54 are serving in the regular army, and they serve for ten years. However, soldiers often suffer from malnutrition, like the rest of the population, and their training is limited by scarcities of fuel and ammunition.

Almost half of the world's arm sales are to developing nations. For instance Eritrea, a small African nation of six million, spends about 21% of GDP on the military to defend itself against neighboring Ethiopia. A number of countries in the Middle East such as Saudi Arabia, Oman, and UAE have high military budgets. Sometimes arms stockpiles are used to protect a repressive government against its own people.

Illegal trade in small arms affects many unstable countries and regions. The main purveyors of various kinds of arms are the members of the UN Security Council plus Germany, with the United States by far the most active at 39% of sales. Russia comes in a poor second at 18% of sales. The powerful voice of the American gun industry, the National Rifle Association (NRA)

by presenting itself as defending the individual right to own guns in the United States, has to date defeated efforts to put together a treaty to ban the illegal trade in small arms.

All the nations put together spent over $1.6 trillion in military expenses during 2010—and the amount has been steadily rising since 2001. The United States spends 43% of that.

Suppose, just suppose the world didn't spend all that money on wars and cold wars and preparedness for war—what else could we spend it on? Here's one candidate: universal primary education (UPE) which has been a world goal since 1990—so far, 22 years. Currently about 115 million children of primary school age aren't in school. Most are illiterate, female, and living in deep poverty. About 264 million children of secondary school age don't attend school either. These numbers are projected to grow by 2025, for a total of 1.35 billion children with little or no opportunity for education—unless the world works harder at it.

Professors Joel E. Cohen and David E. Bloom estimate that to achieve both universal and secondary education for all the world's children would cost between $34 billion and $69 billion per year—in addition to what developing nations already pay for education ($175 billion). Big money, but it's only about 3% of what the world currently spends for arms. One of the UN's Millenium Development Goals is to provide primary education for all by 2015. We'll see.

As for the long-range cost of the Iraq War at $3 trillion, it could instead have provided a year's subsistence income of about $10,000 for every man, woman, and child in the United States (and a nest egg for those who didn't need the income right away). Or the war's price tag could fix America's deteriorating infrastructure. The American Society of Civil Engineers estimates the current cost to repair the country's bridges, dams, roads, wastewater treatment plants, railroads, and levees is $2.2 trillion. That would still leave $800 billion for an Apollo Energy Project/economic stimulus that could simultaneously move us into a clean energy economy and create a lot of jobs doing it.

What could the world do with $1.6 trillion each and every year besides buy a bunch of tanks, missiles, and helicopters? We could end poverty and a lot of suffering, giving billions of people a chance to fully develop their human capacities. We could set out on a new, sustainable path.

So how do we cut the purse strings?

Democide

The more power a regime has, the more likely people will be killed.
~R.J. Rummel

War is horrible enough, yet democide—death by the government in control—actually killed more human beings during the last century than war did. Rummel claims there were 262 million victims of democide in the 20th century, six times the number killed in battle. We refer to the excesses of Hitler, Stalin, Mao, Chiang Kai-Shek, Pol Pot, Franco, Duvalier, Pinochet, Suharto, Kim II Sung, Saddam Hussein, Idi Amin, Rios Montt, and many others less known. At this writing we are witnessing a tragic occasion of democide in Syria—unarmed civilians killed by the government of Bashar Al-Assad for the 'crime' of nonviolent protest.

Most people are not familiar with the term democide, which was revived in the 1990s by R.J. Rummel, an American political scientist, to include genocide, politicide, and mass murders conducted by governments against people under their control. The term is new but it describes events that go back at least as far as the Roman emperor Nero.

The older term *genocide* was coined by Raphael Lemkin in 1944 to mean "a conspiracy to exterminate national, religious or racial groups." Lemkin says this does not necessarily mean mass murder as in the Nazi "Final Solution." In his definition, genocide is

> a coordinated plan of different actions aiming at the destruction of essential foundations of the life of national groups, with the aim of annihilating the groups themselves. The objectives of such a plan would be disintegration of the political and social institutions, of culture, language, national feelings, religion, and the economic existence of national groups, and the destruction of the personal security, liberty, health, dignity, and even the lives of the individuals belonging to such groups.

Since there was no word to describe other kinds of mass killings within a state that were more politically motivated—horrors such as the French Reign of Terror (1793-94), Stalin's Great Purge (1937-38), and Mao's Great Leap Forward (1958-62)—many of these have been called genocides. Here let us reserve the term genocide for the planned destruction of specific ethnic or religious groups or conquered peoples. The distinction between 'genocide' and 'democide' may become important in our efforts to end these various crimes against humanity.

War in an era of doomsday weapons is an existential threat whereas democides don't require advanced weaponry. However, democide is obviously a grave threat to human thrival, just as nuclear and post-nuclear war is to species survival. We are only beginning the study of democide with, so far, two main avenues of approach: democratic peace theory and the study of how psychopathic individuals take over social leadership, or *ponerology*.

Rummel and other researchers note far fewer democides in liberal democracies than under authoritarian regimes. As one would expect, democracy provides a check against the tendencies of powerful leaders to gain and maintain power by violent means. Thus whatever aids the spread of democracy, or maintains its vitality and integrity, helps prevent democides.

From another direction, we can ask *how* tyrants come into power and *why* so often citizens do not or cannot seem to prevent this. How are we sometimes persuaded to follow those who embody the collective human shadow? The new science of ponerology is an interdisciplinary study of how psychopathic individuals often come to lead nations. It was developed by Polish psychiatrist Andrzej Lobaczewski and other psychologists and psychiatrists in Poland, Czechoslovakia, and Hungary, themselves working under repressive regimes some 60 years ago.

Lobaczewski's book *Political Ponerology* describes what he calls "pathocracies"—governments created by a small pathological minority who take control of a society. A notable example is the cluster of highly intelligent psychopathic individuals who constituted the Nazi leadership. This minority which leads in a pathocracy have what Lobaczewski regards as an inborn error (psychopathy) present in 4-6% of the population. Their outstanding trait is a physiologically inability to feel normal human empathy. (Most U.S. psychologists prefer to call psychopathy a "genetic predisposition.")

We need to better understand the type of individual who grasps power and hangs onto it by large-scale violence, and to recognize traits in ourselves as non-psychopathic individuals which make us vulnerable to dangerous leadership. Widespread dissemination of critical thinking would help immunize citizens. Ponerology, together with studies of mass psychology, of violent individuals such as mass murderers, and of the 'authoritarian personality' could lead us to recognize and reject dangerous leaders before they gain momentum.

Inventing Peace

The same species that invented war is capable of inventing peace.
~David Adams, Wesleyan University psychologist

We are *capable* of inventing peace, but how far along are we in designing a world without war? Since the mid-19th century, nations have negotiated to prevent wars and to moderate their worst consequences. International treaties such as the Geneva Conventions and organizations such as the Red Cross protect noncombatants. Other treaties regulate or ban chemical and biological weapons. Besides humanitarian aid and general peacemaking, NGOs have worked hard to ban especially abhorrent weapons such as land mines or DU weapons.

Several international peace organizations led to the United Nations, now 66 years old. The UN oversees many international treaties that head off potential conflicts, and commits peacekeeping forces to calm nations that have already begun fighting. After armed conflicts in weak countries, UN missions also try to rebuild a peaceful society. While reasonably successful, UN peacekeeping is not fully supported by the most powerful nations, notably the United States.

During the past century and a half the human community has, arguably, made a dent in the problem of democide, including genocides. One reason is that the world has moved from barely a handful of representative democracies to a majority of (more or less) democratic states. Another important factor is communication technologies that allow for a great degree of transparency. The first and one of the largest modern mass genocides, though now largely forgotten, was in the Congo over 100 years ago. Very few realized it was happening at the time. However, democides are still occurring, in places such as Syria and Sudan, and the UN has limited powers to stop them because of the doctrine of national sovereignty.

As for cutting the purse strings, the United States is politically very far from the goal of reducing military expenditures. The military/industrial complex, which was already 50 years old before Eisenhower named it, is an integral part of the American economy and doubtless to some extent the economies of many other countries. Most nations rely on the dubious doctrine of deterrence. Nationalism/patriotism remains a strong motivating force in the world despite globalization, instantaneous media, and social networks.

Most of our current efforts to prevent war or negotiated peace do not reach anywhere near the level of complexity and dedication that we need—for instance, giving deeper support for UN peacekeeping and peacebuilding missions, ending the small arms trade that fuels wars in poor countries, and making serious efforts toward universal disarmament. Although a core of dedicated individuals and groups has been working against war for 150 years, our larger society has barely begun the hard work of beating the spears into ploughshares.

We are also not looking ahead, despite the mad pace of war technologies—we are not proactive with the dangers of space war and GNR technologies applied to war. There are possibilities even worse than nuclear weapons.

Looming on the debit side, we still have large nuclear stockpiles smoldering away especially in the United States and Russia, some 20,000 warheads. Ike Jeanes argues that for any given probability of nuclear war, there is an expected time span until it occurs.

American policy-makers, even "the best and the brightest" (or especially those!) have not often taken a long-range and objective look at nuclear dangers. Jeanes says that while deterrence has a role to play (collective rather than unilateral deterrence) nations have relied far too much on this one inadequate strategy:

Nuclear deterrence is a system that is entropic by design and without self-sustaining features….the requirements for average decision-making times of less than 4 minutes to respond to false alarms predisposes the world to [accidental] failure….A failure of deterrence theory would tend to be of such magnitude that one would instantly wonder why an advanced civilization would choose a system so prone to catastrophic failure.

Putting it all together, how far have we come in the last century? How well are we inventing peace? Are we halfway there yet? Have we earned a C+?

In the next chapter, we outline what people have done over the past 67 years to deal with the threat of thermonuclear weapons, from treaties to public organizations and demonstrations.

In later chapters we consider some of the diverse ways that humans go about inventing peace. We also discuss the tradition of nonviolence, the varying meanings of words such as *hero* and *honor*, and some alternatives to the violent stories that we tell ourselves in our attrition culture that may predispose us to making war.

Chapter 5
Nuclear Disarmament

People do not understand that we live on a time bomb.

~ Mohamed ElBaradei, as Director General of the IAEA

When the Cold War ended, most people mistakenly thought the nuclear threat had ended. Now we are entangled with immediate problems such as the economy and media distractions of an election campaign. The biggest problems always seem to be put off to the future—but the future has now arrived. The question is whether humans are capable of dealing with two urgent threats to our survival at the same time. If Americans have finally noticed the elephant in the room (climate change) can we also turn around and see the giant crocodile—nuclear stockpiles, proliferation, potential terrorism, and nuclear accidents—that is slithering our way?

Both of these challenges require us to think in terms of future probabilities, and this doesn't come naturally to most of us. Dietrich Fischer, author of *Preventing War in the Nuclear Age*, tells that a Harvard professor during the Cold War, asked about the likelihood of a nuclear war, replied "Rather low, I would guess about 2 or 3 percent per year." But Fischer notes that with passing time the probabilities accumulate. "Assuming a 2 percent probability per year, after 35 years the probability of a nuclear war having occurred by that time is 50%, after 114 years 90%, after 228 years 99% and after 456 years 99.99%, a virtual certainty."

The United States has done little to stop nuclear proliferation and spends billions each year to maintain and upgrade its own nuclear forces. According to the *Bulletin of the Atomic Scientists*, the U.S. stockpile contained almost 10,000 nuclear warheads in January 2006. On the planetary scale, ElBaradei stated that the world is at a crossroads concerning the Nuclear Non-Proliferation Treaty and disarmament of the nuclear powers (which was part of the treaty):

> North Korea pulled out of the Treaty, Iran is believed to develop nuclear weapons, India and Pakistan are already nuclear weapons states, and Israel is an unconfirmed nuclear power. What is the future of the Treaty? We have not yet managed to have a collective system of security that does not depend on nuclear weapons. We have to ask ourselves, why? I do not condone any of these states, nor do I condone that the five nuclear weapons states—USA, Great Britain, France, Russia and China—30 years after their commitment to move to nuclear disarmament still have 27,000 nuclear weapons. These five countries are symptoms of a system that is dysfunctional.

ElBaradei goes on to say that unless all parties fulfill their commitment to this treaty, we will see the world that President Kennedy predicted in 1963, a world in which there are 15 or 20 nuclear weapons states. Already several more nations are suspected of nuclear ambitions, some of them with quite unstable or corrupt governments. They include Burma, Bangladesh, Venezuela, and the United Arab Emirates. According to Mordchai Shualy in *Foreign Policy*, tensions have been rising between Burma and Bangladesh, and bureaucratic corruption in the uranium-exporting nation of Kazakhstan creates a significant risk of dangerous materials falling into the hands of rogue states or terrorist groups.

Currently, ElBaradei says, forty countries have the capability to develop nuclear weapons. For instance, before Fukushima, Japan could do so within a few months of making the decision. The potential for nuclear war, whether that war is intentional or occurs through computer error,

will increase exponentially with the number of nuclear-armed nations. ElBaradei says "This will be the beginning of the end."

However, a drastic arms-reduction treaty between the United States and Russia (which President Obama said he was planning for a second term, if he wins one) could be a catalyst for other nuclear nations to make agreements to cut their own stockpiles. +++

Nuclear-Weapon-Free Zones: Since the 1960s, countries in a particular region, a continent or subcontinent, have negotiated treaties or conventions to create a Nuclear-Weapon-Free Zone (NWFZ). Such an agreement bans development or deployment of nuclear weapons, includes mechanisms of verification, and is recognized by the UN General Assembly. Treaties currently in place create NWFZs in Latin America and the Caribbean, Africa, the South Pacific, Southeast Asia, and portions of Central Asia. Antarctica, the seabed, and outer space are also NWFZs. +++

The five southern NWFZs cover most of the Southern Hemisphere. Also, because of prevailing wind patterns, this half of the world would receive less fallout if there were a nuclear explosion in the Northern Hemisphere. By 2009, NWFZs covered over half the land area of Earth and represented almost two-thirds of the world's nations. However, the nine nuclear weapons states hold almost half of the world's population. Others are in a collective security bloc such as NATO with a nuclear umbrella.

A conference to establish a NWFZ in the Middle East is planned for December, 2012 but without very high hopes because of Israel's opposition. Yet in a poll held a year earlier, 64% of Israeli citizens favored such an agreement.

Many cities including at least 188 in the U.S., and a few countries such as Austria and Estonia, have banned both nuclear weapons and nuclear power to become a Nuclear-free zone.

Atomic Scientists and Others

I've also gotten to play in front of a million people in Central Park when there was a grass roots movement calling for nuclear disarmament - it was about 1982 - they called it Peace Sunday.
~Jackson Browne, singer, song-writer, and musician, 1948-

Long before World War II, long before the atomic bomb was invented, Albert Einstein understood that disarmament was essential, and that the United States would be the key to disarmament. Einstein said in 1921:

> The United States is the most powerful among the technically advanced countries in the world today. Its influence on the shaping of international relations is absolute incalculable. But America is a large country, and its people have so far not shown much interest in great international problems, among which the problem of disarmament occupies first place today. This must be changed, if only in America's own interest. The last war has shown that there are no longer any barriers between the continents and that the destinies of all countries are closely interwoven.

Disarmament was essential 91 years ago and how much more so since the A-bomb and development of the new and even more powerful H-bomb. Ever since the United States became the first and so far only nation to use nuclear weapons—at Hiroshima and Nagasaki in August, 1945—a number of prominent scientists in the United States and UK, including some who were involved in the creation of the atomic bomb, have dedicated themselves to the cause of nuclear

disarmament. Here is a brief history of these and various other efforts throughout the long and debilitating period of Mutual Assured Destruction (MAD).

At a press conference July 9, 1955, the Russell-Einstein Manifesto was published in London. The Manifesto's authors said they were "speaking on this occasion not as members of this or that nation, continent or creed, but as human beings, members of the species Man, whose continued existence is in doubt." Bertrand Russell began the conference with the statement: "I am bringing the warning pronounced by the signatories to the notice of all the powerful Governments of the world in the earnest hope that they may agree to allow their citizens to survive." British physicist Martin Rees notes that all eleven signers of this Manifesto had already received or would receive the Nobel Prize. They believed that the H-bomb threatened the human race with annihilation.

The Manifesto makes seven major points, listed by David Krieger in *Waging Peace II*:

1. Scientists have special responsibilities to awaken the public to the technological threats, particularly nuclear threats, confronting humanity.
2. Those scientists with the greatest knowledge of the situation appear to be the most concerned.
3. Nuclear weapons endanger our largest cities and threaten the future of humanity.
4. In the circumstance of prevailing nuclear threat, humankind must put aside its differences and confront this overriding problem.
5. The prohibition of modern weapons is not a sufficient solution to the threat; war as an institution must be abolished.
6. Nonetheless, as a first step the nuclear weapons states should renounce these weapons.
7. The choice before humanity is to find peaceful means of settling conflicts or to face "universal death*."*

One of those who signed the Russell-Einstein Manifesto was Joseph Rotblat, the only scientist in the Manhattan Project to leave his position on moral grounds after he realized that the Germans would not succeed in developing an atomic weapon—which removed the justification for the Allies to develop it. Rotblat said he was disillusioned in 1944 when the project head, General Groves, claimed that the main purpose of the bomb was "to subdue the Russians."

Sir Joseph Rotblat worked tirelessly for peace until he died in his mid-nineties. Krieger says "When Professor Rotblat turned 90, he announced that he had two remaining goals in life: first, the short-term goal of abolishing nuclear weapons; and, second, the long-term goal of abolishing war." Rotblat was the founder and president for many years of the Pugwash Conferences on Science and World Affairs that first met in Pugwash, Nova Scotia in 1957. Conferences were based on the Russell-Einstein Manifesto, which called for politically neutral meetings where scientists would assess the dangers posed by weapons of mass destruction, and they were quite influential. When Rotblat and the Pugwash Conferences jointly received the Nobel Peace Prize in 1995, he quoted a phrase from the Manifesto: "Remember your humanity, and forget the rest.*"*

To carry on the special knowledge and responsibility of physicists, they established the *Bulletin of the Atomic Scientists* which continues today. It is famous for the clock on its cover that estimates the world's current danger of annihilation by nuclear weaponry. Currently, the doomsday clock is at five minutes to midnight.

The first actual nuclear disarmament attempt by nations was the Baruch Plan, proposed by the United States government to the United Nations Atomic Energy Commission in 1946. This plan would establish an authority to control the development and use of atomic energy for peaceful uses, and end all development for weaponry, with mandated inspections to prevent this. But disagreements between the U.S.S.R. and the U. S. over how to work out this plan proved

irreconcilable. This very great opportunity was lost and the Cold War arms race began. It is said that Nixon considered escalating the Vietnam War with nuclear weapons in 1969. Other U.S. presidents, cabinet officers, aides, and generals undoubtedly have also considered such actions.

In the 1980s, after 30+ years of nuclear arms race between the United States and the Union of Soviet Socialist Republics, the global disarmament movement was growing. Several mass-audience films alerted the U.S. public to the dangers. Many organizations, campaigns, and events developed, such as the Greenham Common Women's Peace Camp in the UK and international nuclear-free zones in which local authorities and nations prohibited nuclear weapons and/or nuclear power. In 1982, one million protestors in Central Park demanded a nuclear freeze on intercontinental ballistic missiles. Even government leaders began to reconsider their policies. Journalist Alexander Zaitchik says "It was gut fear that motivated President Ronald Reagan, his secretary of state, and their Soviet counterparts to abandon arms racing and begin seriously contemplating total nuclear disarmament in the mid-'80s."

But again, it did not happen. The push for disarmament, like the 'peace dividend' that was expected after the end of the Cold War, was somehow squandered in the Gulf War and frustrated by a Congress dominated by those who opposed treaties and favored military build-ups. Now, after three more decades of neglecting this issue, it is a bigger threat than ever. This is underscored by incidents such as the one in 2007 in which six cruise missiles with nuclear warheads were mistakenly loaded on a U.S. bomber and transported between air force bases.

We have another opportunity to start ending this nightmare. Zaitchik says that President Obama "fully understands the interrelationships between proliferation, arms control and nuclear terrorism." Before his election, Obama made the following statement:

> As president, I will lead a global effort to secure all nuclear weapons materials at vulnerable sites within four years. [I will also] convene a summit on preventing nuclear terrorism [and] *make the goal of eliminating nuclear weapons worldwide a central element of U.S. nuclear policy.*

Obama has already opened negotiations with Russia to cut the two nations' nuclear arms by 80%, reducing each stockpile to 1,000 weapons. If indeed this legally-binding arms reduction process begins, it will need widespread public support. If he is reelected, President Obama's leadership in this area could prove to be his biggest contribution to human species survival. Obviously, it requires a committed and knowledgeable public as existed in the 1980s to support this goal. Can the American public focus on more than one dire threat at a time? Can the world public do so? We simply have to.

Getting from Here to There

> *I think that people want peace so much that one of these days governments had better get out of their way and let them have it.*
> ~Dwight Eisenhower

The first big movement toward disarmament came after the horrors of World War I. The second—the Nuclear Freeze—resulted from people's fears of annihilation in the arms race between the United States and U.S.S.R. The third big peace movement that is needed now will only develop if people realize that we are still in grave danger from nuclear weapons. This requires a concerted effort by peace organizations, churches, women's groups, environmentalists, and others to present the facts and perspective that are so lacking, through teach-ins,

demonstrations, film series and other means, many of which were used in the past. It would certainly be helpful if a popular film could depict the "inconvenient truth" about nuclear dangers.

The Nuclear Proliferation Treaty (NPT), ratified by the United States in 1968, is part of U.S. law (as all treaties are) and is not only designed to prevent the spread of nuclear weapons to new countries—it also represents a binding commitment to the goal of disarmament by the five original nuclear-weapon States. After 44 years it is time to get serious about our promises.

Another project that would indirectly support all kinds of peace efforts including nuclear disarmament would be to rehabilitate the U.S. public's understanding of the United Nations. Political propaganda against the UN, whatever the motives—isolationism, ethnocentrism, or desires of a U.S. elite to continue running the world their own way—has had an effect. Americans in general know little about the UN. People generally don't understand the difference between the UN Security Council, the General Assembly, or the various agencies such as UNESCO or WHO. They think that the UN budget is much greater than it is. Every UN failure and flaw has been greatly magnified, and little is known about its many successes.

One criticism is: "The UN [General Assembly] is just a discussion forum and many of the countries that participate aren't even democracies so they shouldn't have any voice." General Assembly discussions have criticized policies of the United States, and this reverberates in a patriotic honor culture.

However, in purifying the UN, who would decide which countries are democracies? There are degrees of democracy, and none are 100% pure. This idealized UN would not have any power over non-members, as it did in forcing a more democratic election in Mynamar (Burma) by sanctions from other members. Also, some of the least democratic countries have introduced positive and important resolutions. Leaders want to look good before the rest of the world.

Another common sentiment that is not well thought through is this: "The UN is too weak; what we need is a world government." However, giving up a portion of national sovereignty as part of international disarmament is not the same thing as creating a world government. That is too much power in one entity. Nothing guarantees that a world government would be any more virtuous than any other large government such as the EU, U.S., Russian Federation, or China.

The Basic Requirements for Nuclear Peace

If we dare break out of the mind-set that has guided the nuclear strategy of the nuclear powers for over four decades, I believe we can indeed put the genie back in the bottle.
~Robert McNamara, U.S. Secretary of Defense under Presidents Kennedy and Johnson

Ike Jeanes has treated the challenge of how to keep our world from blowing up as a rational, mathematical problem. Noting that both peacefulness and war have features of chaotic systems, he uses probability theory, chaos theory, and similar tools with which I, for one, am not adept. Yet anyone can learn something from this approach, parts of which I will summarize here.

In Jeanes' forecasts, RL (Reluctance Level) measures a nation's reluctance to start a nuclear war: it is the average number of years during which one nuclear entity would tend to initiate one nuclear attack for any reason. Obviously, the higher the RL number, the better. The composite RL, adding up all nuclear nations, measures the average world peacefulness for one year.

The RL or reluctance to be a nuclear aggressor is made up of six factors that inhibit nations from initiating a nuclear attack: Deterrence (DT), Civility (CV), three sub-components of CV, and Absolute Controls (AB). These act together, adding reliability to the blocking effect. Let us

defer discussion of Civility and its sub-components till the next chapter, looking first at Absolute Controls, such as the Nuclear Non-Proliferation Treaty.

It's clear that present treaties and protocols are not adequate to the task of Absolute Contol. For example, inspections by the IAEA only occur by voluntary permission of the inspected nation. Jeanes says that ideally AB should have these features:

Reduction of nuclear stockpiles to a number *beneath* first strike capability and *beneath* the nuclear winter threshold. This would require a nuclear weapons destruction program that in its first phase would limit nuclear weapons to 1,000 worldwide, divided among current nuclear powers, with no weapon larger than 0.1 megaton.

Collective deterrent security. No nation has first strike capability, because all other nations combine to provide an overwhelming opposing force.

Accident protection, with secure storage, international monitoring, and an end to the "enormous risk" of launch-before-detonation policies. All nations need PAL (Permissive Action Link) devices which prevent inadvertent nuclear weapons use.

Nuclear military police

International control

The second feature listed might be a sticking point, politically and pragmatically. Collective deterrence means that if one nation is attacked by another using either conventional or nuclear weapons, all the other signatories to the treaty pledge to come to the aid of the nation attacked. This is similar to the League of Nations idea of collective security (Article X of the Covenant) which was particularly opposed by Senators Henry Cabot Lodge and William Borah, who ensured that the United States never joined the LON. Powerful obstructionist Republican senators are not an extinct species.

Time proved that others of the great powers were also not ready to go to war to protect victims from aggressors which they considered allies. This became clear in 1936 when Britain and France refused to go to war against Italy for its aggression against Abyssinia (Ethiopia). British Prime Minister Stanley Baldwin told the House of Commons that collective security "failed ultimately because of the reluctance of nearly all the nations in Europe to proceed to what I might call military sanctions." With today's nuclear capability, there is also the possibility that military sanctions could escalate to create the very problem that we are trying to avoid. This issue needs more discussion.

Besides Jeanes' list we might consider economic conversion, a process for moving production from military to civilian markets, as happened after World War II. While it is not exactly an absolute control, an international lack of industrial facilities to support warfare would certainly be an obstacle to it. Seymour Melman, a Columbia professor of industrial engineering, wrote extensively on this topic, noting greater difficulty now than after past U.S. wars:

The problem of conversion from military to civilian work is fundamentally different now from the problem that existed after World War II. At that time, the issue was reconversion; the firms could and did go back to doing the work they had been involved in before the war. They could literally draw the olds sets of blueprints and tools from the shelf and go to work on the old products. At the

present time, the bulk of military production is concentrated in industries, firms, or plants that have been specialized for this work, and frequently have no prior history of civilian work.

To succeed in this current situation, U.S. conversion would require a large political transformation involving drastic military budget reductions, reindustrialization to build a green economy, and rebuilding of our crumbling infrastructure. +++

Jeanes adds that since all nations would have to sacrifice a part of their sovereignty to an international authority in this one area of nuclear weapons, it would be a good idea for each country to vote on this by citizen referendums and to then add it to their constitutions as amendments. "This would tend to codify intentions in a manner supported by the assent and participation of the populace and be less subject to dispute upon change of government." +++

Trust but Verify

I want to move to a world of no nuclear weapons but I want to do that through multilateral disarmament so that we all disarm together.
~Ed Milliband, leader of British Labour Party, 1969-

Many of the public assume that disarmament is impractical because there is no way to protect one's nation from an adversary's cheating. This is an odd assumption to make in a world of satellites and GoogleEye. Arms control expert James Fuller says "Very good progress has been made over the years in identifying and solving the technical problems associated with verifying actual warhead reductions." Techniques to detect nuclear tests, delivery systems or warheads themselves include imagery intelligence (IMINT) from covert high-altitude aircraft or drones; telemetry intelligence or TELINT; measurement and signature intelligence (MASINT); space-based nuclear sensors; space-based infrared sensors; one-way cryptographic transforms; electro-optical and radar sensors; seismic intelligence; and of course on-site inspection.

However, technical issues still remained in 2010. Fuller says the one significant area that needs further work is to accurately determine the exact number of nuclear warheads that a nation –state possesses at any point in time—the baseline inventory. Another area that needs a breakthrough is an authentication process to guarantee that the warhead system measured does not have hidden features allowing the inspected party to alter it during or after inspection. Fuller calls for greater cooperation by the world's weapons specialists to solve these remaining technical issues. In the meantime, he says, "confirmation of the dismantlement of declared nuclear warhead stockpiles is quite feasible." +++

The "Giant Loophole" in the NPT

Every known route to bombs involves either nuclear power or materials and technology which are available, which exist in commerce, as a direct and essential consequence of nuclear power.
~Dr. Amory Lovins, Rocky Mountain Institute

Nuclear power (electricity production) is a very large vested interest which has from its beginning been tied to military interests and which by its technical nature brings a nation closer

to nuclear weapon capability. It is probably impossible to decouple nuclear electricity and nuclear warheads. An *Economist* article notes the link between nuclear power and proliferation:

> Nuclear proliferation …has proceeded, and it has done so hand in hand with nuclear power. There is only one state with nuclear weapons, Israel, that does not also have nuclear reactors to generate electricity. Only two non-European states with nuclear power stations, Japan and Mexico, have not at some point taken steps towards developing nuclear weapons, though most have pulled back before getting there.

The Nuclear Proliferation Treaty has so far worked remarkably well to keep the numbers of nuclear powers limited to nine (ten if Iran succeeds in building one or more bombs) rather than the 25-30 that many once feared. The NPT has three parts: non-proliferation, disarmament, and *the right to peacefully use nuclear technology*. Thomas Graham Jr. says the Treaty is built on an implied bargain: the non-nuclear states agree never to acquire nuclear weapons and in exchange the nuclear-weapon states "agree to share the benefits of peaceful nuclear technology" as well as to pursue nuclear disarmament and ultimately elimination of all nuclear arsenals.

Peaceful use of nuclear technology is the "giant loophole." The nuclear powers have not done very well with eliminating their nuclear arsenals, but they have certainly sold lots of nuclear reactors abroad. According to Harper's Index, since January 2007, thirteen Middle Eastern nations have announced plans to pursue nuclear electricity. Yet their part of the world is ideally suited to produce solar electricity. Although Saudi Arabia announced plans to invest $109 billion in solar energy, it also planned 16 commercial nuclear power reactors by 2030.

Malcolm Fraser, Prime Minister of Australia from 1975 to 1983, notes that any country able to enrich uranium to fuel nuclear reactors has everything needed to enrich it further, to weapons-grade. He says we must prevent the two threats of climate change and nuclear weapons. "But we cannot afford efforts to addrss one challenge that end up aggravating the other. Attempting to reduce greenhouse-gas emissions through nuclear energy, thereby fueling the dangers of the ultimate global incendiary—nuclear war—could be the most tragic of all miscalculations."
.

Overcoming Barriers to Disarmament

> *War makes rattling good history; but Peace is poor reading.*
> ~Thomas Hardy, *The Dynasts*

Among the obstacles to denuclearization and demilitarization are these. First, the U.S. public is no longer very aware of the nuclear threat. Since the Cold War ended, a new generation assumes that the danger is over, and they have not been told otherwise by leaders or media. Terrorism has been the issue of the day and now the problem is economic crisis—nukes are not even in the picture.

A second obstacle is that climate change is also a very grave threat. The majority of Americans learned about global warming and began to change their behaviors accordingly only within the last few years. It is possible that most of us have difficulty in dealing with more than one major threat at a time. Yet I am proposing that we must deal with not only climate change and war but half a dozen serious problems simultaneously. Our leaders have to think about more than one problem at once, and so should we all. This need not be depressing or overwhelming. It is possible to multi-task by 'accentuating the positive' that is, by adopting ways of life and

supporting public policies that lead to the sustainable and peaceful future we envision. As Martin Luther King, Jr. said, "Keep your eyes on the prize." +++

A third barrier to disarmament is conservative ideology and Borderer attitudes that have throughout American history supported military solutions. We tell ourselves attrition-culture stories that glorify war. Promoted by self-interest of the military industry and imprinted by 40 years of Cold War policy and propaganda, the ideology of "peace through strength" constantly reinforces the idea that safety (both national and personal) depends on weaponry, while negotiation and international cooperation are signs of weakness. Despite all indications that the United States is armed far beyond any reasonable fears for defense against other nations, many voters follow those politicians (and lobbyists) who zealously guard against budget cuts even when the Pentagon itself asks to end a weapons system.

A related complication is that the military is the most respected public institution in the United States, far above media, Congress, medicine, or education. The armed forces provide opportunities for people in low-income groups, allowing them to rise through the ranks based on merit. The military is probably the most racially desegregated of major institutions. Many local communities are economically dependent on a military base.

Zaitchik points out another tricky area that concerns public reactions to fear in the United States. The possibilities of a terrorist strike using an actual fission bomb (not just a 'dirty bomb') may actually be quite high. In December 2008, the bipartisan Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism issued a book, *World at Risk*, which concluded that "unless the world community acts decisively and with great urgency, it is more likely than not that a weapon of mass destruction will be used in a terrorist attack somewhere in the world by the end of 2013."

Some nuclear critics have criticized the WMD commission's report for being too scary, since the conservative reflex to such fears is to hang on to nuclear weapons and promote militaristic policies. Zaitchik says "The mere discussion of nuclear dangers…appears to drive the public away from the very policies that would reduce them." This is particularly true when it comes to the possibility of nuclear terrorism. Because of this kind of response, many who want a bold arms control program would soft-pedal the dangers of nuclear terrorism. But Zaitchik maintains that we must confront our fears—and the facts, noting that fear propelled both public and leaders during the 1980s Nuclear Freeze movement.

The fourth, huge obstacle is intertwined politics and economics, especially in the United States. The nation has depended for over half a century on military Keynesianism to provide a stimulus to the economy. Taxpayers put up with bloated Pentagon budgets draped in patriotism and the idea of defending against enemies. In some states, particularly Southern ones, military bases are often the biggest industry in town. Thus military spending is larger and the military industry is even more far-reaching than the auto industry.

Congress is an integral part of the military-industrial complex. Chalmers Johnson points out that President Dwight D. Eisenhower, in the draft version of his farewell address in 1961, identified the problem of national dependence on military spending as the "military-industrial-congressional complex." Members of Congress, looking for lucrative defense contracts for their district, are symbiotic with defense contractors and the Pentagon. By now, says Johnson, the defense budget has grown beyond any serious congressional oversight or control.

A local writers' group further identifies supporters of the military establishment as the "military-industrial-Congressional-media-academic-complex." By choosing to ignore the giant

crocodile in the room, all of us are implicated in the military-industrial-congressional-media-academic-*citizen* complex.

Nevertheless, since 2006 many formerly hawkish officials such as Henry Kissinger, George Schultz, Sam Nunn, and William Perry have spoken out in favor of a bold arms control program. An article in *Foreign Affairs* says that "two-thirds of all living former secretaries of state, former secretaries of defense and former national security advisers [support] the logic of zero." Ivo Daalder (Brookings Institute) and Jan Lodal (former president of the Atlantic Council" conclude that with such bipartisan consensus, "the president will have an opportunity to make the elimination of all nuclear weapons the organizing principle of U.S. nuclear policy."

Space War and GNR: Any new, dangerous technologies such as nanotechnology that can be adapted for warfare should be developed cautiously, if at all, until warfare is not an option, much less the first option as it seems to be at present. The robotics aspect of GNR is rapidly advancing in the form of robotic aerial drones. A *Futurist* prediction is that by 2020 these drones will become "the must-have weapon for air forces across the globe." More than 50 countries have bought them—especially China—and world spending is expected to double in the coming decade, from the current $6.6 billion. Some drones are solar-powered, some are the size of songbirds, and others come in nano-sized swarms. They are used for military assassinations, surveillance and reconnaissance, as well as for law enforcement and other civilian applications.

Military contractors are lobbying the U.S. government to loosen export restrictions on unmanned aircraft despite the strong possibility that remote-controlled killing machines could be used by all sorts of regimes across the world. Arms control expert Daryl Kimball says "The proliferation of this technology will mark a major shift in the way wars are waged."

We could consider the possibility of declaring a moratorium on GNR technology until such time that the vast majority of humans are operating at a higher level of consciousness than at present; and until nation-states have either transformed themselves or disappeared. But a moratorium on developing new weapons that can destroy our species will be a hard sell since a number of nation-states are already pursuing GNR technology precisely for military advantages.

The latest direction taken by U.S. militarism is the drive to dominate space and conceivably to carry on armed conflicts there. We U.S. citizens should insist on a Space War Freeze, since our own government is the only major power that seems to want to prepare for warfare in space. An organization dedicated to this issue is Global Network Against Weapons and Nuclear Power in Space. In 2008 some members of Global Network joined with members of the enduring Women's International League for Peace and Freedom (WILPF) to pursue the objective of setting up a new space treaty or treaties. The name of their working group is PAROS, standing for Preventing an Arms Race in Outer Space. Hopefully others from among the many groups that supported the Nuclear Freeze in the 1980s will join this new 'keep space for peace movement.'

So, what can an individual do? First, everyone can get educated about nuclear and militarization issues and publicize them, organize with like-minded people locally, nationally, and across national borders, and apply political pressure to those politicians who are in a better position to act on this danger to humanity.

Chapter 6
Creating Peace

One day we must come to see that peace is not merely a distant goal that we seek, but that it is a means by which we arrive at that goal. We must pursue peaceful ends through peaceful means.
~Martin Luther King, Jr. (1929-1968)

Let's start with the good news. Since the end of the Cold War in 1989, more wars have ended than have begun. Between 2000 and 2007, the number of armed conflicts fell from 40 to 30, according to the Global Peace Index. However, recent wars such as Iraq and Afghanistan-Pakistan have affected large numbers of people. Danger remains in large armies, high technology weapons, and militarily aggressive leaders such as Kim Jong un, the clerics of Iran, Likkud politicians in Israel, and neo-conservatives in the United States.

The actions of disarmament and demilitarization listed in the previous chapter are absolutely necessary, yet they are still not enough to prevent war. We need to go deeper to find the many roots of violence. They reach into our politics, our economic life, our cultural assumptions, and how we raise our children. They are related to a nation's rate of population growth and how well its people take care of their bioregion. We can see roots of war in our media and entertainments. Lawrence LeShan says that societies often wage war when their people have developed a "mythic" mode of experiencing reality in terms of good and evildoers. This kind of thinking is often agitated by political entrepreneurs of one sort or another.

At the deepest level, we can acknowledge our shadow. According to Jungian psychology, the unacknowledged, negative aspects of each individual's psyche are together known as the shadow personality. Collectivities also have shadows, and every nation has one. For example, threads of violence run through American history. These recurrent memes manifest today in violent crime, school bullying, racism, violent media including children's games and toys, the spread of gun-carrying laws, and most of all in three common attitudes and group behaviors: glorification of the military, cultural arrogance, and an unacknowledged history of unprovoked military and covert actions towards other people on the globe.

But how will we ever be brought to look at our shadow? Nation-wide discussion groups and workshops sponsored by churches or peace groups could help. Documentaries such as "Bowling for Columbine" might be a starting place for discussion. Perhaps we need a new form of group psychotherapy that not only taps the collective wisdom of the group but focuses it in order to exorcise the demons of the greater collectivity. We need good answers for those who believe that any attempt to look at America's shadow personality means that one hates one's country. +++

The Global Peace Index is a yearly survey that ranks 144 of the world's nations by their peacefulness internally and externally. Peace is defined as "the absence of violence." The Index uses a number of measures such as the number of deaths from organized conflict, potential for terrorist acts, number of homicides per 100,000 people, number of jailed population per 100,000 people, military expenditure as a percentage of GDP, and ease of access to small arms and light weapons. As one might expect, countries ranking highest in peacefulness are virtually the same ones found to be most stable by the Failed States Index, a survey by a different group. The least peaceful are Iraq, Afghanistan, Somalia, Israel, Sudan, and Democratic Republic of the Congo.

Somewhat below the middle rank, between Ukraine and Kazakhstan, is the USA at 83rd. U.S. ranking on the Global Peace Index suffers especially from high military expenditures, high level of organized crime, an easy access to arms, and a large number of military deaths.

War Is Not Inevitable

It is common to imagine that, because we'd never go to war without a good reason, having gone to war, we simply must have a good reason.
~David Swanson, *War Is a Lie,* 2010

It may be hard to find good reasons why your nation went to war, especially when certain factual matters come to light (usually much later). The explosion of the U.S.S. Maine in Havana Harbor was probably not caused by a mine laid by the Spanish. Iraqi troops were not in fact massing at the Saudi border before the Gulf War. North Vietnamese torpedo boats did not launch an "unprovoked attack" against a U.S. destroyer on "routine patrol" in the Tonkin Gulf on Aug. 2, 1964. A Senate report in 2006 found no evidence of links between the regime of Saddam Hussein and al-Qaeda, and little or no evidence to support claims made by U.S. intelligence concerning Iraq's weapons of mass destruction. And of course Poland did not attack Germany, as Hitler told the German people, even staging mock attacks to justify his own invasion of Poland.

David Swanson notes that even wars that seemed justified at the time could have been prevented by starting farther back—by using some foresight.

We could have halted Hitler's armies by not concluding WWI with an effort seemingly aimed at breeding as much resentment as possible in Germany…or by putting our energies seriously into the League of Nations as opposed to the victor-justice of dividing the spoils, or by building good relations with Germany in the 1920s and 1930s, or by funding peace studies in Germany rather than eugenics, or by fearing militaristic governments more than leftist ones, or by not funding Hitler and his armies, or by helping the Jews escape, or by maintaining a ban on bombing civilians…

More specifically, Jeanes points out the world's nations could have stopped Hitler during 1920-1925 by carrying out provisions of the Treaty of Versailles and implementing arms control through the League of Nations.

Similarly, in 1852, the noted pacifist Elihu Burritt proposed a compensated emancipation of slaves that could have prevented the American Civil War.

Wars only seem inevitable when you don't try to prevent them.

In 1986, twenty eminent scientists met in Seville, Spain and issued the Seville Statement, later adopted by UNESCO, in order to refute the notion that organized human violence is biologically determined (see Appendix). We can't blame war on our Cro-Magnon ancestors. +++

Civility

There never has been a war yet which, if the facts had been put calmly before the ordinary folk, could not have been prevented.
~Ernest Bevin, UK labor leader, politician and statesman, 1881-1951

251

Ike Jeanes writes about the statistical probability of nuclear war. The point of such forecasting is to lead to specific policies to prevent such a disastrous course. The Jeanes approach requires some new terms and close reading, but it is worth the effort.

A major factor in the Jeanes formula is *Civility*, which decreases the likelihood that a nation would initiate a nuclear war. Civility (CV) is a combination of *Morality*, *Friendship*, *War Weariness*, and *Absolute Controls*, all of which inhibit a nation from initiating war. Jeanes says that if only one of the above four subcomponents remains high, it will prevent a CV failure. Added together, they increase CV reliability: they increase inhibitions against starting wars.

Napoleon Bonaparte is supposed to have said "Even in war moral power is to physical as three parts out of four." It is even more important in preventing war. Jeanes says that Morality (ML) is central to the debate and "of strategic importance in guiding nations." Morality refers to religious, ethical, and moral opposition to war. International morality is also codified in international law and treaties such as the Geneva Conventions or the charters of the League of Nations and UN.

Religion is part of ML, but most religious institutions have not developed a high level of revulsion for nuclear war. Despite the existence of pacifist religious sects such as Quakers, Mennonites, and Bahais, and peace traditions in Catholicism, Islam, Hinduism, and Buddhism, pacifism is not yet a widespread attitude in most countries. Jeanes notes that "Religions usually do not rise above and depart from the culture of which they are a part enough to guide cultures to a rejection of war." We could challenge the world's churches, temples, and mosques to develop a higher degree of concern for the human species as a whole, to transcend patriotism/nationalism especially during periods of rising tensions with other countries. +++

National policies may reflect an ethical opposition to war. Countries such as Switzerland and Sweden emphasize a sufficient defense against external threats but oppose building offensive weapons or planning for their use. The Swiss policy of armed neutrality and non-intervention has kept it at peace for almost five centuries (except for two brief occupations by French forces in the 18th century). Jeanes notes that defensive readiness costs much less than spending on both offensive and defensive military systems, which imperils a country's economic health. +++

Friendship (FR) is demonstrated by public opinion in one country towards various others, and a history or tradition of good relationships with all other nations. FR shows wide and rapid changes, and is quite susceptible to manipulation by propaganda. Jeanes notes that those who are enemies in one war were frequently allies in a previous war. One study shows 20% of interstate wars occurring between former allies. However these strategic alliances and hostilities have little to do with actual friendship between two populations.

Jeanes notes statements by U.S. founding fathers regarding international friendship that contrast with the modern country's contentious outlook. George Washington in his 1796 Farewell Address said "Observe good faith and justice toward all nations; cultivate peace and harmony with all." In 1809 Thomas Jefferson stated "The care of human life and happiness, and not their destruction, is the first and only legitimate object of good government." Their advice contrasts greatly with U.S. policy over the last 60 years. During this time leaders have constantly looked for allies and enemies while conducting a four-decade Cold War, at least seven hot wars, and a number of covert actions directed against the governments of other nations.

At this time a large segment of the U.S. public seems unfriendly towards almost all Muslim countries and barely friendly with old enemy Russia and rising superpower China. A large minority seems to dislike Europe as a whole and others disparage Africa. These suspicious and

insular attitudes are at odds with the Christianity that the majority of Americans espouse and also the words of the country's Founders. We could keep pointing out this contradiction. +++

The third subcomponent in the list is War Weariness (WW), which Jeanes says is an acquired immunity that unfortunately does not last very long. For example, most nations exhibited an extreme revulsion towards war after World War I but this did not prevent World War II from happening only 20 years later. Jeanes notes that 1983 was the height of the anti-nuclear war movement, but at the same time several societies expressed great admiration for world leaders such as Reagan and Thatcher who were among the most pro-military.

Jeanes says that WW could be reinforced, but he does not say how. One possibility is to impose a war tax so that jingoism has a direct, personal, and continuing cost. Film series or other media events help us remember the tragedies of historical wars. A local peace group, OMNI, provides a yearly commemoration of the bombings of Hiroshima and Nagasaki. +++

Morality, Friendship, and War Weariness can add reinforcement but Jeanes indicates that Absolute Controls (AB) are a basic requirement—the most essential subcomponent. As described earlier, AB includes reduction of nuclear stockpiles below first strike capability and below the threshold that would cause a nuclear winter. This would require, in its first phase, proportionally limiting nuclear weapons to 1,000 worldwide, held between current nuclear powers, and preferably none greater than 0.1 megatons. A second necessity is accident protection such as secure storage, international monitoring, and especially the end of launch-before-detonation policies which present "absolutely enormous risk." There should also be international control and nuclear military police. Absolute Controls "must assure that all aggressive uses of a nuclear weapon are made substantially impossible."

The subcomponents of Civility provide a framework for actions supporting peace and preventing war.

People against War: Opposition to war takes many forms. A person may oppose all wars—a pacifist position—or object to specific wars such as U.S. military actions in Vietnam or Iraq. An individual who refuses to serve as a combat soldier is a conscientious objector, but the military may allow him to qualify only if he belongs to a particular religion. Israeli soldiers who specifically refuse to serve in the occupied territories are called "refuseniks" and are likely to serve jail sentences. Other ways to oppose war are preventing violence at all levels and consciously building a culture of peace. This can involve paradigm changes and recognition of the evidence that human beings have to be manipulated into war and soldiers have to be conditioned to kill other human beings.

Some organizations focus on children: they examine toys and games, publish lists of those that glorify war and violence, or organize boycotts against toys that encourage children to identify with military aggressors and their 'sexy' technologies. Another area to review is films. According to Scott Brown in *Wired*, the Pentagon has for at least 50 years provided Hollywood productions with tanks, planes, weapons, and even soldiers, in addition to "significant script input." Brown satirizes Pentagon input into space battle scenarios; this is more serious seen in the context of actual U.S. military aspirations to dominate space.

Soldiering is glorified by films, television shows, and video games as well as by schoolbooks and the culture at large, but David Swanson points out, "The swords and horses are only in the recruiting ads." As we accept that people who enter an experiment must give their informed consent, suppose we agreed that from this day forward, any young person who considers joining any army in the world should know some objective, historical facts about past wars. Before

giving an informed consent to induction, each could receive a comic book about history that describes the propaganda justifications for past wars and the actual effects of those wars. Let it be distributed widely to all sixteen-year-olds, as the Gideon Society gives out Bibles. +++

Recipes for Peace

> *Imagine all the people, living life in peace.*
> ~John Lennon, song-writer and musician, 1940-1980

Katie Paul of *Newsweek* finds this recipe for peace inside the Global Peace Index: be a small, stable, democratic country with a well-functioning government and freedom of the press; trade and be on good terms with neighboring countries; have a high life expectancy and literacy, and elect plenty of women to parliament. We can find several models. Switzerland is not the only country that has remained at peace for a long time. Many nation states, even larger ones such as Canada and Brazil, do not have a long history of wars and colonizing other nations (although one cannot justify how those two countries have sometimes treated indigenous populations.)

So peace activists might well promote decentralization, government reforms, `preventive health care, literacy campaigns, and women candidates. +++

Bullies on Every Scale: As peace breeds peace*,* violent habits beget violence*.* Violence begins in the home, the school, and the workplace. The spiritual teacher J. Krishnamurti said:

> War is the spectacular and bloody projection of our everyday living. We precipitate war out of our daily lives; and without a transformation in ourselves, there are bound to be national and racial antagonisms, the childish quarreling over ideologies, the multiplication of soldiers, the saluting of flags, and all the many brutalities that go to create organized murder*.*

One area of daily violence is school bullying, a subject that came to prominence after a series of school shootings in the USA perpetrated by children who had been bullied. More quietly, bullying may result in lifetime psychological problems, even suicides. In the UK, some research indicates that at least half of children are affected by bullying. An Australian psychotherapist, Robin Grille, welcomes the new programs in schools that identify bullies and teach them more effective social skills, but thinks the focus is too narrow: "The truth is that violence…is a symptom of families that are hurting, perhaps with members that are hurting each other." He says that many studies have shown the link between violence in the home, including verbal abuse, and violent children. Grille's book is *Parenting for a Peaceful World*. +++

Children learn aggression by imitation. One study examined 11-14 year old school children who were bullies and/or victims. Both groups were most likely to come from homes with "authoritarian" styles of parenting, characterized by punishment, "an immutable power imbalance which favors the parents," and the lack of any explanation, negotiation, or consultation with the children. Bullying or at least the choice of targets can also be learned through media: UK students say that the popularity of American high-school films showing stereotyped geeks has worsened the situation for bright students in British schools.

Grille says that only about half of abused children grow up to be abusive themselves, and the key difference is whether the child is convinced he or she deserved the harsh punishment. Those that grow up believing they deserved being hit become more accepting of violence in general. They are likely to become bullies, victims, or both. Grille notes that by 1999 over 80 countries

had banned corporal punishment in their schools, and ten had legislated against its use in the home. By 2012, 32 countries had banned corporal punishment.

Culture of Peace

> *If we are to teach real peace in this world, and if we are to carry on a real war against war, we shall have to begin with the children.*
> ~Mohandas Gandhi, 1869-1948

To prevent war, one must build peace. Jean Shinoda Bolen, M.D. predicts that feminism's third wave (sixth wave by my reckoning) will be a widespread women's peace movement "growing out of the recognition that only when women and children are safe from violence, deprivation, and abuse will the cycle of violence begetting violence end." We might remember that Julia Ward Howe campaigned in 1870 to establish a Mother's Day for Peace, a protest against the carnage of the American Civil War, an occasion for women across the world to come together across national lines and oppose war in all its forms. She never expected it to become an occasion for flowers, mushy greeting cards, and breakfast in bed. But by the time it was declared a national holiday in 1914, Mother's Day had lost its pacifist message.

Women have already played a huge role in anti-war activism and peace-building actions. The Women's International League for Peace and Freedom (WILPF) began in 1915 and has been actively working against war ever since. Women activists laid the groundwork for the 1963 Nuclear Test Ban Treaty. In Northern Ireland, women initiated a successful peace process and in Rwanda, the Rwanda Women's Initiative began by seeking homes for a half million children orphaned by genocide. Note that countries that have many women in their parliaments are more likely to be peaceful. +++

One direction of hope is to support all peace-building institutions such as conflict resolution training, peace studies in colleges and universities, and the proposed cabinet-level U.S. Department of Peace. By 2003, over 70 U.S. colleges and universities offered degrees in peace studies. Journalist and educator Colman McCarthy has long worked to bring peace studies into public schools as well. Colman said

> If peace is what every government says it seeks, and peace is the yearning of every heart, why aren't we studying it and teaching it in schools? Few other opportunities for decreasing violence are greater than peace education: systematically teaching the literature of peace and techniques of conflict resolution, in every grade, in every school.

Former Ohio Representative Dennis Kucinich several times proposed a bill to establish a U.S. Department of Peace. The latest Department of Peace Act is HR 808, with 62 co-sponsors. It would deal not only with international peace but would also coordinate and assist local programs that deal with interpersonal violence, child abuse and neglect, drug and alcohol abuse, criminal rehabilitation, community programs to reduce violence, education in conflict resolution, and other areas. The bill would create a U.S. Peace Academy as a sister organization to the U.S. Military Academy. It would draw attention to peace endeavors and the lives of peacemakers with a national holiday—Peace Day. The proposed bill—14 pages—is available online. Similarly, in January 2009, 80 members of the UK Parliament called on their government to fund more local conflict prevention initiatives, noting that "for every dollar spent globally on conflict prevention nearly two thousand times as much is spent on defense and the military." +++

Modern peace advocates work at the local level to build a culture of peace, which can cover a wide range of activities. In my area, for instance, the Omni Center holds forums, hosts musical events where local musicians play and sing songs they have composed about peace, organizes vigils and rallies, commissions peace monuments to counter the many statues of generals and cannons on courthouse lawns, and much else besides. +++

We need to redefine patriotism, so that it is not always about war and soldiering. Attachment to one's own land with its forests, rivers, and mountains, its diverse people, and the highest ideals for which it has stood in its history—these should be enough to define a patriot—or we might use the terms *matriot* and *matriotism* instead. +++

Common usage is to speak of one's 'mother country' yet the etymological roots of the word patriotism suggest a fatherland. Germany under Hitler called itself a fatherland. So is our country the nourishing mother or the commanding father who tells us to make war? Uncle Sam used to be a benign figure, but judging by American actions post-World War II maybe even he takes steroids.

Perhaps the patriot sees himself as the father figure defending the motherland? Yet of all the invasions and wars fought by the United States of America, only one or two could we possibly describe as defense against a credible threat (World War II and the War of 1812). Most of the rest (excepting the American Revolution, the Civil War, and World War I) were imperialistic wars against other, weaker nations or were part of subduing the original dwellers of this land.

Peace is certainly much more than the absence of war. One may devote efforts directly to peacemaking rather than to opposing wars or a particular war. Or one may direct efforts to building a culture of peace to counteract the dominant militarism. Another way is to live peace, to make oneself a vessel for it, to cultivate good will towards others and to discipline one's own tendencies towards anger, prejudice, pride, envy, and gossip. +++

Taproots of War

Hanging onto our military empire and all the bases that go with it will ultimately spell the end of the United States as we know it.
~Chalmers Johnson, *The Blowback Trilogy,* 2004-2007

The United States has lately been misusing its vast power in a number of ways that reduce the chances for survival of the whole human species. It has unilaterally broken treaties, begun developing new nuclear weapons, for eight years ignored climate change, and for two decades has used depleted uranium weapons that turn areas of the globe into permanent toxic wastelands. If the United States were to continue on its present path of corporatism and war, not only America but the entire species would be at risk. We urgently need to change an aim that the United States has pursued for 60 years. No President would dare attempt this change except under economic duress and with an overwhelming demand from the public. Yet it must be done. That task is to turn America back from an Empire to a Republic.

At some other moment this could be a bipartisan aim. Patrick Buchanan, a Republican, says that Americans let a prime opportunity pass 20 years ago, with the collapse of the Soviet Empire, to lay down their own burden of empire. He adds "And we have reaped the reward of all the other empires that went before: a sinking currency, relative decline, universal enmity, a series of what Rudyard Kipling called 'the savage wars of peace.'"

The first action is to make drastic cuts in the military budget. Even with the state of the economy as an added incentive, it will still not be easy to cut back an acquisitions program that

now represents an investment of $1.6 trillion dollars. UK journalist Rupert Cornwell predicted before the 2008 election that whoever wins the current presidential campaign will have a hard time taking on arms manufacturers, the Pentagon, and Congress. "Even a liberal Democratic President will hesitate before taking an axe to the Pentagon budget." The proposed defense budget for 2009 is the largest (adjusted for inflation) of any since World War II: $515 billion, or four percent of the total economy. Cornwell says adding in $150 billion supplementary outlays and various "black items," annual military spending may be more than a trillion dollars. Thus military Keynesianism makes the economy go round, despite the danger to the species.

According to Reuters, congressional auditors reported that in 2008 almost 70% of the Pentagon's major programs to buy weapons were over budget, adding $296 billion to the original estimates. They are also on average 22 months behind schedule. Jim Wallis, editor of *Sojurners,* notes that the estimated U.S. debt in 2010 is $1.6 trillion, which by coincidence happens to be the total cost of those same 96 major weapons programs.

With about half the world's military machine and at least 737 foreign bases, the United States is in fact a military empire. One can hardly deny it. The U.S.A. also wields inordinate economic power. Other nations model themselves after America or react to it in kind, thus increasing the influence of its memes, including the destructive ones. Along with this focus on military dominance, the United States government is bankrupting itself, has not been repairing its infrastructure, and is generally failing to provide for citizens in the way that they expected from history and from its general wealth. Military spending past and present consumes 40% of our tax dollars, driving up the debt.

Current estimates are that the Iraq War will cost over $2 trillion. Linda J. Bilmes and Nobel Prize-winning economist Joseph E. Stiglitz say that it will cost $3 trillion. This includes payment on war debts. Putting $3 trillion into perspective, this divides into $10,000 per capita U.S. and $460 per capita *worldwide.* That is, the Iraq war potentially costs every current member of the species an amount equivalent to the total yearly income of many millions of very poor people. (Nearly three billion of us live on less than $2 a day.) Suppose the same amount had been set aside to dig wells, replant deserts, and teach children?

One proposal that might curb U.S. jingoism is legislation—or possibly a Constitutional Amendment—that mandates a **war tax** to accompany any declaration of war, 'police action,' training of foreign armies, or armed action whatever it is called. Part of the proceeds would go into a fund caring for disabled veterans for many years in the future. This war levy might be a 10% flat tax on everyone living above the poverty level, for the duration of the war. The rough formula used by the White House is a cost of $1 million per year for every soldier deployed. Once it was clear how much war actually costs U.S. individuals and families, Americans would be much less likely to enter into military adventures and wars based on flimsy reasons. Their well-known hatred of taxes would make war highly unpopular except in cases of real threat. +++

History teaches that those who try to dominate the rest of the world tend to lose democracy at home. Johnson says that militarism and imperialism have led to the imminent collapse of our own constitutional system. William Pfaff notes that

> The new army also has political ambitions. It now dominates U.S. foreign relations with a thousand bases worldwide and regional commanders like imperial proconsuls. Both General McChrystal and his superior General David H. Petraeus, have been mentioned as future presidential candidates. The last general who became American president was Dwight Eisenhower. He is the one who warned Americans against "the military-industrial complex."

Most proposed remedies for U.S. militarism do not go to the core of the problem. Johnson's solution is a drastic one: Imperial Liquidation. It is necessary to pull up deep roots of war which have grown in the United States over the last 60 years of imperialism and military Keynesianism. "The American people must make the decision to dismantle both the empire that has been created in their name and the huge (still growing) military establishment that undergirds it." +++

Paleoconservative Pat Buchanan jokes that if all U.S. troops were brought home, 10,000 politicians, diplomats, generals, journalists, and associates of think tanks would have to find another line of work. (Strangely, he doesn't mention military contractors.) Buchanan says pessimistically, "The Empire will endure until disaster befalls it, as it did all the others." Johnson finds two exceptions, saying that unless we follow the examples of the British and Soviets who voluntarily gave up their dominions, "our decline and fall is foreordained." Liquidating their empire after WWII, the British avoided becoming a tyranny. Johnson warns that our task may be even more difficult than that of the British. Fifty years after Eisenhower's warning, the meshed interests are so deeply entrenched that imperial liquidation may require "a revolutionary mobilization of the American citizenry, one at least comparable to the civil rights movement of the 1960s."

The first specific action would be to withdraw completely from Iraq and turn over to the Iraqis the permanent military bases that we have built there. (The U.S. embassy in Baghdad—now the biggest embassy in the world and highly fortified—could be turned into a university campus.) +++   Next, close down most of the military bases the Pentagon maintains in about 150 foreign countries and on every continent, costing over $100 billion a year, and rewrite the Status of Forces Agreements that currently exempt American troops from local criminal laws, taxes, anti-pollution legislation, and other such measures that apply to citizens of the host nation. +++

 Closing these bases would also cut off "the ever-lengthening train of camp followers, dependents, civilian employees of the Department of Defense—along with their expensive medical facilities, housing requirements, swimming pools, clubs, golf courses, and so forth—that follow our military enclaves around the world." Johnson says that we need to reduce the size of our standing army and to radically scale back reliance on civilian contractors and other agents who work for the military outside the chain of command and the Uniform Code of Military Justice, thus outside military discipline and accountability.

The United States must wind down its role as the world's largest supplier of arms and munitions (although Johnson does not give details about how to persuade the multi-billion dollar industry to convert to peaceful production). This nation should ban weapons such as land mines, cluster bombs, and depleted-uranium ammunition that are so destructive over long periods of time for civilian populations—and support the UN in outlawing them entirely. +++

Another specific step Johnson proposes is to abolish ROTC and other programs that promote militarism in the nation's schools. +++ He urges Congress to rewrite the National Security Act of 1947 that established the CIA, reforming it into an organization that collects and analyzes foreign intelligence but taking away clandestine activities such as sabotage, subversion of other governments or rigging their elections, torture, and rendition. +++

Johnson insists that these and other proposed changes are not utopian, saying:

> Failure to undertake such reforms would mean condemning the United States to the fate that befell the Roman Republic and all other empires since then….If we leave Iraq and our other imperial enclaves, we can regain the moral high ground and disavow the need for a foreign policy based on preventive war. I also believe that unless we follow this path we will lose our democracy and then it will not matter much what else we lose.

Perhaps the first necessity is to inform ourselves and the rest of the American public about how to recognize imperialism when they see it. +++ President Obama has so far not opposed the Pentagon in any significant way, leading to the fear that it is no longer possible for any president to do so, without very strong backing from a large part of the public.

The Nation State: Is It Necessary?

Empires don't last forever. Regimes don't last forever. People—they are eternal, they are the makers of history.

~Jose Ramos-Horta, President of East Timor

Controlling the development of species-destructive war technologies could mean the end of our present system of armed nation-states with large military establishments. It would require a step-by-step, multilateral disarmament of all military weapons, with the same sorts of surveillance and inspection as with nuclear disarmament. The same advanced surveillance technologies that threaten our privacy and democratic institutions have a positive role to play in policing disarmament. We need a large number of sane, alert, and dedicated citizens in many countries to insist that their governments give up the game of war for once and all.

If nation-states will not disarm, even more radical steps might be necessary for human survival. We the people of the world could decentralize ourselves into smaller, more cohesive, self-reliant regions, perhaps forming a world federation of bioregions. We could multilaterally refuse to support militaristic national governments. To be clear: The goal would be *not* a one world government, *not* a uni-polar world, *not* a shadow rule by corporations, *not* a multi-polar world of bristling armies and an uneasy peace based on mutual assured destruction. The goal would be decentralization of power in order to maintain peace.

You may find universal disarmament an impossibly idealistic idea or even a bad one, but what is your alternative? Would you wait until thirty or forty nations have not only nuclear capability but a dozen other technologies ready to destroy life on the continental or planetary scale—and then hope for the best? Yet if the idea of dis-inventing the modern nation-state sounds too shocking even to think about, perhaps you prefer a nightmare world of space wars, robotic wars, and nanotech wars? Let us at least think about the unthinkable as we brainstorm our way into surviving. +++

Part Two: Making a Living, Having a Say

Here and now, the world has a certain political and economic structure: rich countries and poor countries, economic globalization with long supply chains, a very great deal of poverty, and a number of technologies that were introduced by human cleverness and the profit-motive but without much in the way of ethics and foresight.

Today's situation is not immutable. In fact it is changing as you read this.

Chapter 7
Protect Democracy

Cast your whole vote, not a strip of paper merely, but your whole influence.
~Henry David Thoreau, 1817-1862

This chapter concerns dangers to democracy, especially in the United States. American governmental decline and corruption, militarism, and corporatism have been building for a long time. U.S. institutions and policies urgently need radical renewal in order to maintain American democracy for Americans and also to remain a model that many have looked to in the past. Most importantly, because of America's power in the world, this country *must not* slide into outright fascism. In that worst-case scenario, authoritarian rule by militarists and unrestrained corporations could trigger nuclear war, nanotech or space war, along with rapid climate change and an acceleration of other ecosystem failures. Our own national failure could even lead to the demise of the entire human species. Here too we urgently need new ideas and paradigms, and renewed commitments to both democracy and humanity.

Then the next, forward-looking chapter presents ways to create more democracy everywhere—the antidote to corruption, authoritarianism, and fascism. Not only is self-government a good in itself, but species-wide challenges are much more likely to be met in a world with more transparency and more citizen involvement. Recent decades have seen a number of new ways to expand people's participation in their own governing. These techniques need to be more widely known and applied in the United States.

An optimist can see democracy growing across the world. Several great steps forward occurred in the 1860s: In 1861, Alexander II emancipated Russian serfs, freeing over 23 million individuals. Lincoln's Emancipation Proclamation of 1863 and passage of the 13th Amendment in 1865 freed about four million enslaved people in the United States. (In both cases, it took longer for the freed people to gain full freedom.) In Britain, the number of British men allowed to vote increased by almost three times because of the 1867 Reform Act. Still, virtually no women anywhere could vote until the 1890s, when women gained this right in the U.S. Territory of Wyoming, New Zealand, and the colony of South Australia. Most countries did not give women the vote until after World War II, and there is still no woman's suffrage in Saudi Arabia.

Democratically-elected governments went from none in 1900 (by the measure of universal suffrage) to 120 democracies today, according to a Freedom House survey. In 1900 most countries were monarchies and empires. The United States was then among a handful of more-or-less democratic countries, but U.S. Senators were not elected by popular vote until 1913 and

women—constituting half the population—were left out of the electorate until 1920. Many Black citizens were effectively deprived of the vote until civil rights legislation later in the 20th century.

Freedom House lists as one advantage of this great increase in democracy that "History indicates that stable and established democracies rarely war with one another." They fail to add that stable and established democracies were the imperial powers of the first half of the 20th century, and that the United States, in particular, has often warred against underdeveloped nations rather than against other democracies.

By the end of the 20th century over 62% of nations were electoral democracies by the Freedom House standard of "universal suffrage for competitive, multiparty elections." Yet elections that are supposedly multi-party can go badly awry. Freedom House adds that the "liberal democracies" that respect human rights and the rule of law are somewhat fewer: 85 nations that represent 38% of world population. The organization listed another 16 nations including Egypt and Malaysia as having "restricted democratic practices" in 2000.So between two-thirds to three-fourths of world nations have some degree of democratic governance, although little more than one-third is reliably democratic.

Freedom House also publishes a yearly Freedom in the World report which lists the least free nations. Virtually none of the bottom 20 countries and territories they listed in 2009, such as North Korea, Burma, and Turkmenistan, has ever had a representative government (although many have movements and dedicated leaders with aspirations toward establishing democracy). These countries are ruled by dictators, military juntas, dominant political parties, battling warlords, or in some cases by another country.

Democratic government is threatened not only by outright dictators but by widespread corruption. Transparency International, a corruption watchdog, publishes a list of 178 nations ranked from least to most corrupt; more precisely, its Corruption Perceptions Index is a measure of "perceived levels of public sector corruption." The 2010 list put Somalia, Afghanistan, and Mynamar (Burma) at the bottom as most corrupt, with Denmark, Singapore, and New Zealand at the top as highly clean. A 2010 Transparency International study found that people believed that levels of corruption had increased in the previous three years. The biggest increase was perceived by respondents in North America and the EU. Around the world, people identify political parties as the most corrupt institution, followed by civil servants and legislatures,

The United Nations has a Convention against Corruption, which entered into force in 2005 with 140 signatories, including the United States. Measures include model preventive policies, such as the establishment of anticorruption bodies and enhanced transparency in the financing of election campaigns and political parties. Signatories agree to cooperate with one another in every aspect of the fight against corruption, including investigation and the prosecution of offenders. +++

In the TI Index the United States is listed as 22nd least corrupt. If that is an accurate perception—despite the huge influence of campaign donors and lobbyists on U.S. lawmakers' decisions—then we might conclude that only a handful of countries actually have well-functioning, clean, democratic governments.

According to former labor secretary Robert Reich, with the growth of globalization since the 1970s, corporate lobbying has greatly increased in the USA and around the world. For instance, even before the Citizens United decision, the lobbying and advertising budget of the U.S. Chamber of Congress and its subsidiaries was already much greater than the spending of either the Republican or Democratic National Committees, and it did not have to disclose the source of its funds. The Chamber reportedly spent about $1 million on issue ads praising Scott Brown in

the week leading up to the special election in Massachusetts that upset the balance of power in the Senate. The recent U.S. Supreme Court decision that would allow corporations free rein in giving to election campaigns can only increase the corrupting influence of money.

The American Legislative Exchange Council or ALEC, a non-profit policy organization composed of about 2,000 conservative state legislators and 300 corporate representatives, is funded by large corporations such as Exxon Mobil, Walmart, and AT&T, as well as corporate foundations. Much more than a simple lobbying group, ALEC writes model legislation that benefits its corporate members or promotes their ideologies, and then lawmakers introduce the bills as their own work. Each year, hundreds of such laws pass state legislatures. While not illegal under current law, the whole process lacks transparency and violates the spirit of democratic representation. It is automation of the legislative process.

Democracy Is Fragile: Modern representative government has many antecedents such as ancient Athens, the Roman republic, proto-republics in ancient India, medieval Iceland, the Iroquois Confederacy, and the gradual, unwritten constitution the English developed after the Magna Charta. Yet the majority of democracies are less than a century old and they are still somewhat fragile. Many nations have the trappings of democracy such as elections and parliaments but they lack other essentials such as a free press, checks and balances, or a way to protect essential rights such as in the U.S. Bill of Rights. Elections can be stolen and parliaments can become rubber stamps, resulting in a 'constitutional dictatorship'.

A common danger in democracies is that politicians may foment division in order that they or their party might win elections. One example is the 1992 destruction of a 16th century mosque by a raging mob in India. The incident sparked Hindu-Muslim riots that left 2,000 people dead. A recent report by the Indian government accuses top Hindu politicians of complicity in the mosque's destruction, which in fact helped lead the Hindu nationalist party to win the 1992 election. The United States is currently seeing a surge of divisive politics of a sort which dates back to the Republican 'Southern Strategy' of the 1970s.

Even in the minority of countries where democracy is well-established, traditional or technical construction of elections and parliamentary action may subvert democratic results. For instance, Canadians elected conservative President Stephen Harper in 2008 with only 37% of the popular vote, while 63% voted for four center-left parties which all had similar platforms. In another case, the advent of electronic voting machines without a paper record of votes available in case of a recount has led to several suspicious elections across the world. As late as the 2008 U.S. election, more than one-third of its states did not require all votes to be recorded on paper.

Procedural rules can allow an aggressive minority to take over a parliament. Thomas Geoghegan, a lawyer, notes that the U.S. Senate supermajority requirement, Rule 22 as revised in 1975, is both unconstitutional and against the founders' intention. It can allow a tiny minority of Senators to block majority action. These aren't real filibusters anymore but threats of filibuster, and they are used about 25 times as often as they used to be, in order to prevent any forward motion. Republican Senator Tom Coburn of Oklahoma said, "I love gridlock. I think we're better off when we are gridlocked because we're not passing things."

Another procedure being abused is "unanimous consent" which the U.S. Senate requires for presidential nominations although they are not required by the Constitution to be unanimous. Still other occasions for gridlock and political blackmail are recurring votes on the debt ceiling. The United States and Denmark are the only democratic countries which have a debt ceiling, which is not mentioned in the U.S. Constitution. From 1962 to 2011, the ceiling was raised 74 times or roughly one and a half times a year.

Constituents may become so frustrated that they lose respect for their elected representatives and the whole democratic process. But this can feed into the desire for a 'strongman' leader. Instead of vilifying Congress as a whole, the public needs to make distinctions between those Senators and members of Congress who vote on the basis of their good sense and integrity, and others who seem corrupted or too easily misled. Most votes are not unanimous. For instance, in the October, 2002 vote on the War Resolution that allowed President Bush to invade Iraq six months later, 23 Senators voted against it. While only one Senator voted against the Patriot Act in 2001, 10 voted against re-authorization in 2006, and 23 voted against its extension in 2011.

Closing Societies

It is important to bear in mind that the death of Hitler did not mean the death of fascism.
~Mairead Corrigan, 1944—, co-founder The Community of Peace People, Nobel Prize

Some nations once had democracy but lost it. Naomi Wolf's term for a democracy that is gradually losing its freedoms is 'a closing society.' This closing is especially likely to occur when a country has had only a brief experience of democracy. Russia, Ukraine, and Hungary currently seem to be regressing to authoritarian governments.

Not every garden-variety dictatorship should be called fascism. Let us reserve that term for an industrialized nation that once had representative government but later succumbed to fascist ideology. Although definitions differ, fascism is first of all a political *theory* that advocates authoritarian government, puts the state above the individual, glorifies the nation and often its dominant ethnic group, and rejects both reason and democratic egalitarianism. Fascist ideology casts the relation between nation-states as a sort of Darwinian struggle, and it is therefore militaristic and aggressive. If fascism were to take hold in one or more major industrialized nations such as the USA, it would be a terrible danger for the entire species at the point when we urgently need radical changes in a number of areas. Instead of looking forward, fascism looks backward and freezes social evolution.

But why on Earth would any people who once had the vision of democracy give it up for a narrow, violent, authoritarian political system? That's a question we must all address. It was Abraham Lincoln or maybe P.T. Barnum who noted that "You can fool some of the people all of the time." Some 150 years later it is surprising how easily some of us are fooled, and just how many are hoodwinked despite our modern sophistication and an overflow of communications technology. In the USA many observers see a widespread lack of accurate information among the general public, with a growing inability to distinguish evidence from opinion. Such ignorance is truly dangerous in a democratic republic that depends on informed citizens.

There may be a 'tipping point' of fear, misinformation, lack of information, and susceptibility to propaganda that marks a closing society. The tipping point depends in large part on how many of us turn into the group that you can fool all of the time. I will hazard a guess that a country enters the danger zone when somewhere between one-fourth and one-third of the public stops thinking for themselves (or were never allowed or taught to do so) and start to follow ideologies and demagogues that foment division. These ideologies and demagogues may be part of a 'disorganized conspiracy' supported by an elite group that wants to maintain and expand their own economic and political power. Closing down a society requires only a fearful, find-somebody-to blame minority and a distracted, confused, passive majority.

In many parts of the world democracy is threatened by self-serving ideologies, the power of transnational corporations, militarism, and the potential of new technologies to provide a police state with more pervasive control than ever seen before. While surveillance and electronic data processing technologies have some potentially positive uses, such as universal inspection to prevent nuclear proliferation, they also pose grave danger to human social structures. Can individual freedom persist without privacy? Surveillance/data techniques make it far too easy for governments to control their populations, raising the specter of a universal fascist state.

It Can't Happen Here

So long as the people do not care to exercise their freedom, those who wish to tyrannize will do so; for tyrants are active and ardent, and will devote themselves in the name of any number of gods, religious and otherwise, to put shackles on sleeping men.
~Voltaire, French writer and philosopher, 1694-1778

A great many American citizens regard our nation as the main proponent and guardian of the world's democratic freedoms. It's those other countries that need help. We don't look first to the mote in our own eye. Yet, although we seldom confront the fact, fascism is a real danger in the United States. We are not exceptionally immune.

Some of the ideological roots or manifestations of American proto-fascism are the following:

Social Darwinism: A belief prominent in the late 19th and early 20th century, SD considers the social order to be the product of natural selection of the strongest or fittest, who should be allowed to flourish in society through laissez-faire economics while the weak and unfit should be allowed to die. It links with racism and eugenics. This old belief is quite evident in the here and now of American politics.

Libertarianism/Objectivism: Political philosophies advocating an extreme degree of individual freedom, with laissez-faire capitalism as the ideal political-economic system. In Ayn Rand's Objectivism, pursuing one's own self-interest is the highest moral purpose. Borderers whose ancestors suffered from constant warfare between English and Scottish kings tend to dislike government. However, the likely effect of eliminating government is rule by corporations or corporatism, a type of fascism.

Neo-conservativism: 'Neo-cons' are former leftists who became anti-communist liberals between the 1950s and 1970s and later developed into a distinct militaristic, pro-imperial right with great admiration for Israel's Likud party and its tactics. Many are former students or followers of political philosopher Leo Strauss, who believed in rule by elites, using deception as needed. Strauss approved of war as a way to bring humanity out of its hedonistic torpor.

The United States showed many symptoms of a closing society during the Bush years and indeed over the last sixty years (starting with the Cold War, Senator Joe McCarthy, J. Edgar Hoover, and CIA covert actions). People need to be aware of the problem in order to prevent it. Merely replacing the individuals or party in power will only buy a little time; citizens must remain active and engaged. Keeping a free media is an essential prerequisite—especially newspapers with investigative reporting—and net neutrality. +++

Our Constitutional system of checks and balances tottered for eight years of the Bush Administration. The controversial Patriot Act and Military Commissions Act increased

government surveillance and gave unprecedented powers to the military and the president. Legal observers saw the latter act opposed not only to the U.S. Bill of Rights but to the much older principle of English common law, *habeas corpus,* that gives anyone accused of a crime the right to appear before a court and be shown cause for why he is being restrained. The lengthy Patriot Act was rushed through Congress soon after the 9/11 attack—critics said that it must have been ready beforehand—and proponents of both bills justified drastic curtailment of liberties because of fears of 'terrorism.'

After President Obama's election, the ACLU developed a detailed plan to restore the rule of law, with measures to revitalize the Justice Department, again putting its authority behind civil rights and voting rights laws, end over-classification of federal documents, stop the "Ashcroft Doctrine" that subverted compliance with the FOI Act, and overhaul 'watch lists' that target innocent people as terrorism suspects without any recourse. Many citizens expected President Obama to work on restoring Constitutional law, a field in which he had expertise.

However, the Center for Constitutional Rights (CCR) was disappointed in many of Obama's early actions or inactions. Then the Obama administration influenced the Supreme Court to let stand a lower court decision that set a shocking precedent. In a one-line ruling the Court said that anyone declared a "suspected enemy combatant" by the president or his designates is no longer a "person" or a legal entity. Most recently the National Defense and Authorization Act of 2011 contains Sections 1031 and 1032 which authorize the military to arrest and indefinitely detain American citizens without trial or charge. The law also includes Amendment 1068 (offered by Republican Senator Kelly Ayotte of New Hampshire) which overrides the list of permissible interrogation techniques in the US Army Field Manual and undermines President Obama's executive order banning torture.

On May 19, 2012 the House passed a National Defense Authorization Act that contained a last-minute, bi-partisan amendment to "strike the current ban on domestic dissemination" of propaganda material produced by the State Department and the Pentagon. This would nullify previous laws passed in 1948 and 1987 to protect Americans from being propagandized by their own government. The President had threatened to veto the bill for other reasons, but one wonders how the amendment was justified by its proponents.

Checks and Unbalances

We just need a president who can sign the legislation that the Republican House and Senate pass. We don't need someone to think. We need someone with enough digits on one hand to hold a pen."
~ Grover Norquist, Conservative activist and lobbyist

Besides these laws that threaten long-held freedoms, serious problems exist in both the executive and legislative branches, deep-seated difficulties that go back more than one decade. For instance, Congress has failed to assert its Constitutional right to declare war for over 60 years, allowing a succession of presidents to take this power. President George W. Bush produced over 800 'signing statements' to nullify laws after signing them—Congress needs to establish rules and oversight of this kind of executive lawmaking. Meanwhile, Congress deteriorated after Newt Gingrich and his class of '94 set out to destroy civility. For a decade the dysfunctional legislative branch simply rubberstamped legislation some of which (such as the

Patriot Act and Military Commissions Act) directly opposed America's tradition of Constitutional government and individual liberty.

The last four years (2009-2012) have been dysfunctional in a different way because of hyper-partisanship. Despite President Obama's early attempts to bridge partisan differences, after his first ten months in office the Republican Party seemed united in opposing all his major legislative efforts and trying to "break" his presidency. They offered few compromises or alternative plans. Since the election in 2010 of 5 Senators and 33 Representatives with Tea Party support, Republican intransigence has increased to the point that hardly any action can be taken. Scholars and the public agree that Congress is at its historical nadir.

A healthy democracy needs at least two parties, with the party or parties out of office as opposition parties. What it does *not* need is political warfare, with the minority explicitly planning total obstruction, and especially at a time of converging human crises.

A healthy democracy also needs broad participation by citizens, but U.S. voter turnout is lower than that of many other countries. In fact, in a comparison of parliamentary elections held in 169 nations from 1945-2001, the U.S. came in 120th at 66.5%. The country with the highest participation was Australia—at 94.5%. Since 1925, Australia has had mandatory attendance at the polls, subject to a small fine of about $15. Meanwhile, the U.S. Republican Party tries to discourage voting still further, with purging lists and various restrictions, because a broader turnout tends to favor the Democrats. Instead, we might do well to make voting mandatory and to encourage it as much as possible. Let Republicans find ways to appeal to a broader public.

As mentioned earlier, the high cost of political campaigns because of TV ads means that many legislators are out drumming up funds when we would expect them to be in Congress working on bills or speaking on the Senate floor. A ban would of course be fought tooth and nail by the networks and receive little support from members of Congress who hoped to be reelected. But retired and retiring members and legislators who are willing to serve only one term might ally to promote this. After all, such a ban is in place in several other western democracies. +++

Another area of needed reform is that many political positions and processes should be non-partisan but are not, especially the redistricting process after each census, which is controlled by governors. State-level efforts especially in California are trying to establish nonpartisan commissions. +++

Something else that is symptom and/or cause of U.S. political dysfunction is that so few women are involved in our national legislature. In female representation the country is ranked 69th in the world, behind Iraq, Nepal, Cuba, and Kyrgyzstan. The problem seems to be located in the primary system, where party recruiters look for male candidates.

Both the problem of gerrymandering and under-representation of women would resolve under some version of proportional representation, which is used by more nations than the plurality voting system used in the USA. PR also gives voters more choices and usually leads to higher voter turnout. PR is easiest to implement locally, by modifying a city charter. Cincinnati and San Francisco almost adopted PR in the 1990s by referendum (45% of the vote). Changing to PR at state level requires only a vote by the legislature or by a voter initiative. Douglas J. Amy, professor at Mt. Holyoke, says that it would be easy to create multi-member PR districts for congressional elections. This would not require a constitutional amendment, but only the repeal of a 1967 federal law. +++

Another simple measure that would help elections express the voters' true feelings is instant runoff voting (IRV) where voters rank their candidate preferences. It ensures that the winning candidate also won the majority of votes, and thus eliminates spoilers. However, Mount Holyoke

Prof. Douglas J. Amy says that while IRV is an improvement over plurality voting especially for single-office elections such as mayor or governor, it is a poor substitute for proportional representation in legislative elections.

The American public can demand ever deeper changes by continuing to elect reform candidates at all levels of government, perhaps one-term independents not affiliated with either major party, then making certain they carry through structural changes in Congress and other areas of government to end the power of lobbyists, the incumbent advantage, and other corrupting influences. In 1992 Ralph Nader offered a list of 10 pleas to the U.S. Presidential candidates to improve civic dialogue and democratic institutions. These **Concord Principles** include improved taxpayer oversight of public expenditure, more governmental transparency, public financing of elections, checks on Presidential and Congressional pay raises, 12-year maximum term limits, binding referenda, initiative and recall powers at the state level, and non-binding national referenda. Most of the Concord Principles still apply and along with proportional representation might supply the basic platform for a reform party. +++

Disaster Capitalism

Disaster Capitalism is neoliberalism imposed undemocratically. It exploits natural disasters, civil wars, foreign invasions, coups d'etat, terrorism, or explicit deception. It always seeks to make its changes irreversible.

~Definition-of.net

Naomi Klein introduced the term 'disaster capitalism' in her 2007 book *The Shock Doctrine* to describe an extreme form of modern capitalism that takes advantage of chaos and sometimes deliberately creates it. It might be a natural disaster, as the Indian Ocean tsunami in 2004, or it might be a *coup d'etat* with the express purpose of imposing disaster capitalism, as September 11, 1973 in Chile. Or it might be a drastic austerity regime imposed by the International Monetary Fund or other entity. The authorities, conquerors, or economic powers-that-be impose 'reforms' that would have been impossible before, including privatization of public property, arbitrary elimination of laws and slashing democratically chosen programs that help ordinary citizens. This is a profoundly undemocratic process, illustrated by what recently happened to the governments of Greece and Italy, still considered to be democracies. Paul Craig Roberts, formerly Assistant Secretary of the Treasury under President Ronald Reagan, points out:

> Two elected European prime ministers, George Papandreou of Greece and Silvio Berlusconi of Italy, were forced to resign over the sovereign debt issue. Not even Berlusconi, a billionaire who continues to lead the largest Italian political party, could stand up to the pressure brought by private bankers and unelected European Union officials. Papandreou lasted only 10 days after announcing on October 31, 2011, that he would let the Greek voters decide in a referendum whether or not to accept the austerity being imposed on the Greek people from the outside.

Roberts notes that the question of whether to accept drastic austerity measures (that would for instance cut minimum wage by 20%) or else to default was not decided by the Greek people themselves. The two men who have been appointed in the place of the elected prime ministers of Greece and Italy are both bankers, both members of the Trilateral Commission, and Italy's Mario Monti is a former EU Commissioner. Roberts suggests that as money establishes control over governments, democracy becomes a liability. "[Future] historians will speak of the transition

from the divine right of kings to the divine right of money." Let us hope Roberts is wrong—but it will take a struggle to make him wrong.

In the United States we see in Michigan something very much like these unelected, undemocratic leaders who impose austerity measures in European countries. Public Act 4 (the Local Government and School District Fiscal Accountability Act) which passed in March 2011, grants unprecedented new powers to the state's emergency managers (EMs). These powers include breaking union contracts, taking over pension systems, setting school curriculums and even dissolving or disincorporating municipalities. EMs, who are appointed by the governor, can "exercise any power or authority of any officer, employee, department, board, commission or other similar entity of the local government whether elected or appointed."

Many in Michigan believe that economic difficulties are being used as the excuse to gut democracy. Opponents of PA 4 are conducting a petition drive asking for a referendum on this law and there is also a lawsuit targeting it.

Free Trade vs. National Sovereignty: Operating on a very large scale and without public transparency, trade agreements often attempt to override the laws and policies of representative governments. The latest manifestation may be the worst of all: the Trans-Pacific Partnership or TPP. Negotiations currently involve the United States and eight other nations but are set up to grow to any number of countries. TPP negotiations have been conducted in great secrecy since they were initiated by George W. Bush in 2008. TPP is now in its 13th round of negotiations, nearing the end, and a leaked document finally shows what industry lobbyists are up to. Unlike previous free trade agreements, TPP covers a wide range of issues and only two out of its 26 chapters actually have to do with trade, while the rest focus on new corporate rights and privileges. Lori Wallach in the *Nation* says "Countries would be obliged to conform all their domestic laws and regulations to the TPP's rules—in effect, a corporate coup d'etat."

One of the most controversial provisions in TPP expands the parallel legal system that was part of NAFTA. This allows corporations to sue government in special courts over actions that might threaten the corporation's future profits. Corporations can sue a nation or a state about its land-use policies, financial regulations, bans on toxins or pollution, or laws to protect public health, human rights, or working conditions. TPP would set up a tribunal of three lawyers—who sometimes act as judges and sometimes represent corporations, thus disregarding conflicts of interest.

Some Conditions That Favor Fascism

Unintelligent people always look for a scapegoat.
~Ernest Bevin, British labor leader, politician and statesman, 1881-1951

For several decades, Britain and Europe have seen the rise of right-wing nationalist and xenophobic political parties and movements in reaction to high immigration rates from North Africa and Asia. Whether these minority movements will increase in numbers and political power during the current economic collapse remains to be seen. When money and jobs get scarce, people tend to demonstrate one of two common responses. They can show solidarity with all those in the same boat or they can blame some sub-group for their troubles. Different types of leaders promote unity or blaming. In Nazi Germany the scapegoat option prevailed; in the United States, under FDR's leadership, it didn't. However, the USA is not safe from fascist demagogues and in fact had several in the 1930s such as Father Coughlin and Gerald L. K. Smith.

Extreme ideological polarization grew in the United States over the past two decades with negative TV ads, emotional wedge issues, and the rise of scorched-earth politics after 1994. The tendency to find scapegoats and to demonize political opponents increased exponentially. The Republican Party has adopted Manichean (Good vs. Evil) traits of the Christian fundamentalists who form a large part of their base, and borrowed xenophobic and combative memes from neo-Borderers in the southern and western states where the GOP is strongest. Now the Tea Party movement promises an intensification of these trends. Neo-Borderer arguments proceed in large part by attacking symbolic individuals and groups.

Also, anti-government attitudes persist from old Borderer experiences in Great Britain, from states' rights ideology in defense of slavery, and Southern defeat in the Civil War. Rather than a reasoned conservative, libertarian, or anarchist position, these attitudes lend themselves more to demagoguery, obstructionism to the point of sabotage —to anarchy rather than anarchism—and attraction to one-party rule and militaristic leaders who can present a warrior image.

The Southern sense of victimization by the North (and victimization in general) is still strong, with the North often vaguely defined as the east and west coasts or as identical with liberalism. What historian Richard Hofstadter identified in 1964 as "the paranoid style in American politics" owes its motive power to the persistence of Borderer culture and its discontents, the feeling that America has been taken away from them. For many, the South never surrendered, and they still identify with the lost cause. But in fact, the region has continued to dominate politics post-World War II if only through obstructionism whether it was by Dixiecrats, Southern-based Republicans since 1994, the Blue Dog Democrats of 2009, or the Tea Party.

Political scientist Augustus B. Cochran III notes that by the 1990s, Southerners dominated both the executive and legislative branches and both major parties. "Policies since the 1960s began to assume a distinctly 'Southern' cast" including the end of the second Reconstruction in civil rights and a backlash against gains made by women in the 1960s and 1970s." The "low road" to international competitiveness which involves cutting wages, jobs, taxes, and R&D followed a conservative economic prescription that resembled that of the Old South.

Neo-Borderers readily adopt technology without its more problematic underpinnings in science, and are especially attached to that portable but powerful machine the gun. Their attraction to militias suggests a desire to reenact guerrilla war. Some members of the Tea Party movement have explicitly suggested an armed revolution to restore conservative rule.

Wild rumors, invective, and hate speech are becoming more extreme, noticeably so since election of the nation's first mixed-race president. Several instances of ideological murder—members of a Unitarian congregation and an abortion-providing doctor—were clearly linked to repeated verbal attacks by specific media demagogues. Such incitement has contributed to violence before, as in Rwanda before its large-scale massacre, where Hutu disc jockeys on the radio continually referred to Tutsis as "cockroaches."

A country at war requires enemies—external scapegoats and domestic ones. With Saddam dead, and Osama bin laden hidden for years, Taliban fighters were turned into virtual demons although they are not much different from the Northern Alliance 'friends' of the United States. The two most visible domestic targets are undocumented immigrants from south of the border and Middle Eastern Muslims, along with other scapegoats including homosexuals, feminists, abortionists, liberals, the unemployed, and blacks. Manichean tendencies in neo-Bordererism are furthered by demagogues and demagogic media such as Fox News and talk radio.

The problem is how to lessen the influence of hate speech and 'doomsday programming' without interfering with First Amendment rights of free speech. Many argue that even an

updated Fairness Doctrine would not be useful because there are now so many other venues for hate speech besides network TV and radio, where the government has some control because it leases electromagnetic frequencies to broadcasters. There is almost a century of precedent for regulating public broadcasting "in the public interest."

The right of free speech adheres to individuals, but not necessarily to their electronic megaphones. Glenn Beck, Bill O'Reilly, Alex Jones, and Michael Savage are free to rant away in the local beer hall but they would not be able to reach millions except for the doctrine of corporate personhood.

Militarism

Of all the enemies to public liberty, war is perhaps the most to be dreaded because it comprises and develops the germ of every other.
~James Madison, fourth American President, 1751-1836

Besides economic hard times and the power of old ideologies, other circumstances that predispose countries toward authoritarian governments are militarism, military-industrial complexes, and empire-building.

U.S. military culture tends to express neo-Borderer attitudes: a warrior culture finds expression in a warrior institution. Military bases congregate in the South along with most of the country's private military academies for well-to-do families and wayward boys, and many Southern and Western states provide a high proportion of enlistments relative to their population.

The United States is justly proud of civilian control of its military, but such control is not 100%. Author and political columnist William Pfaff says that the creation of an all-professional army may have been the most dangerous decision that Congress ever made. Daniel Ellsberg, who leaked the Pentagon Papers to *The New York Times* almost 40 years ago, says that Obama, like Lyndon Johnson before him, is afraid of a military revolt by top commanders who want to enlarge an ongoing war. The revolt would consist of resignations and "making a political case to his public and to the Congress that he has been weak, unmanly, indecisive, weak on terrorism, and has endangered American troops" says Ellsberg. In other words, surrender, which is anathema to Borderer culture as far back as the Celts.

Brooks Atkinson, *New York Times* theatre critic, noted that "After each war there is a little less democracy to save." Although militaristic values permeate U.S. culture, they are not truly compatible with democratic values. There is always a tension between them, made crystal clear in a report by retired U.S. Army Colonel Ralph Peters published in *The Journal of International Security Affairs*. The article promotes military control of news in future wars: censorship, news blackouts, and military attacks on what he calls "a hostile third party in the fight….a media establishment that has forgotten any sense of sober patriotism." Col. Peters adds "The point of all this is simple: Win. In warfare, nothing else matters. If you cannot win clean, win dirty. But *win*. Our victories are ultimately in humanity's interests, while our failures nourish monsters."

But what matters in warfare is not what matters in a democracy, which requires free and open information, respect for human life, and a broader view of what is ultimately in humanity's interests. In fact the U.S. military has already demonstrated a policy of attacking independent journalists in Iraq. All together, 189 journalists have been killed in Iraq, at least 16 by the U.S. military. Jeremy Scahill, who writes about the views of Col. Peters, notes that while militaristic

neoconservatives are no longer in power as they were in the Bush administration, they have not disappeared from the ranks of government.

Fascism is intimately linked with war. Thomas Merton, Trappist poet and pacifist, said:

> The real problem of violence…is not the individual with the revolver, but death and genocide as big business. This big business of death…involves a long chain of individuals, each of whom feels himself absolved from responsibility…Our antiquated moral theology shudders at the phantasm of a mugging or a killing on our doorstep. But it blesses and canonizes the antiseptic violence of corporately-organized murder, because corporate murder is respectable, efficient, clean, and above all, because corporate murder is profitable.

Larry Agran, onetime U.S. presidential candidate, estimated that between 1947 and 1991, the arms race consumed $10 trillion in American wealth. Other estimates are that the Cold War cost $13.1 trillion ((1945-1996). That is big business, indeed.

A Soft Coup

There will be, in the next generation or so, a pharmacological method of making people love their servitude, and producing dictatorship without tears, so to speak, producing a kind of painless concentration camp for entire societies, so that people will in fact have their liberties taken away from them, but will rather enjoy it, because they will be distracted from any desire to rebel by propaganda or brainwashing, or brainwashing enhanced by pharmacological methods. And this seems to be the final revolution.
~Aldous Huxley, "The Ultimate Revolution," lecture, 1962

Fascism won't necessarily take over with tanks and barbed wire. It doesn't even require a mastermind, a secret conspiracy, or overt violence. Aldous Huxley's famous dystopian novel *Brave New World*, published in 1932, depicted a totalitarian World State built upon the principles of Henry Ford's assembly line and mass consumption of consumer goods, and B.F. Skinner's behaviorial psychology and conditioning techniques. Almost everybody in *Brave New World* was happy, or thought they were, even though they were so genetically engineered and mentally conditioned that there was hardly an individual left within to feel anything.

Many think that for the United States and other technologically advanced nations, *Brave New World* is a more likely scenario than *1984*. That is, a hedonist, consumerist, brainwashed public could be designed and manipulated by an elite class without the distasteful repression and violence of an old-fashioned dictatorship.

The potential for this more insidious sort of fascism requires even more vigilance from those of us who want freedom and self-actualization for humankind as well as for ourselves. Resist the siren-call of manufactured pleasure and look for the hook within the bait.

Big Brother and His Shadow

To wear an improper expression on your face (to look incredulous when a victory was announced, for example) was itself a punishable offense. There was even a word for it in Newspeak: facecrime, it was called.
~George Orwell, *1984,* dystopian novel published 1949

Now that almost everybody is online and your house can be found on a Google map, privacy issues arise daily. For instance, the new technologies can lead to high-tech stalking and identity theft. Those stalking former lovers and spouses, or new targets for harassment and abuse can use the web, instant messaging, caller ID, cell phones, radio scanners, GPS services, spyware, miniature video cameras, and public databases. There are dangers from criminals, unstable individuals, intrusive commercial interests, and government at every level.

GeoEye plans to deploy a new polar orbiting satellite called GeoEye-1 with such accuracy and resolution that according to GeoEye's CEO, "From 423 miles in space, we'll be able to see an object the size of home plate on a baseball diamond." Satellite technologies do have some positive uses, such as viewing environmental changes. One website broadcasts satellite images of a dozen vulnerable villages in Darfur, allowing the public to track troops and document atrocities. But do these positive uses outweigh the tremendous loss of privacy?

The situation sometimes reminds me of the evolutionary arms race between bats using sonar guidance and night-flying moths which have pairs of ears on each side of their abdomen tuned to the exact same sound frequencies emitted by the bats that are hunting them. For example: Google, the search engine giant with by far the largest market share in most countries of the world, may play the role of the bat. Virtually all of Google's revenue is from advertising—in 2010 Google earned $28 billion from its AdWords service. As of March 2012, Google has a new policy of sharing information between all 60 of its services, including Android phones and You Tube viewers, in order to enable more personalized advertising. This new policy has disturbed many users, appears to violate EU law and may be illegal in other countries such as Japan and South Korea. Governments are investigating and consumer groups are protesting.

Meanwhile, Mozilla, maker of the world's second most popular web browser, Firefox, takes the part of the moth. Mozilla has released a new Firefox add-on (called Collusion) to allow users to see instantly which companies and other third parties are watching them as they browse. CEO Gary Kovacs says "Collusion will allow us to pull back the curtain and provide users with more information about the growing role of third parties, how data drives most Web experiences, and ultimately how little control we have over that experience and our loss of data." Mozilla plans to build its own database showing which third parties are collecting most data, making this information available to privacy campaigners.

Many Facebook users object to the site's newly mandatory function "Timeline" which puts vast amounts of private information into the public domain. There are ways around this, too.

Here's another example of privacy invasion. A smartphone app was recently released by branches of the Dept. of Homeland Security in Kentucky and West Virginia for the purpose of allowing citizens to report "suspicious activity." As such it could be used maliciously or ignorantly, by high school pranksters, bigots, or paranoid personalities. At the least it could waste agency time and taxpayer dollars. But more disturbingly, a federal data base of photos could be used for developing facial recognition software, or as the basis for a lifetime dossier on citizens who are totally innocent of wrongdoing.

The FBI recently deployed a new system called NOX that uses covert Radio-Frequency Identification (RFID) technology to track people without their knowledge. Besides homeland security, NOX addresses the economic impact of workplace theft. According to the American Management Association, almost all businesses are subject to employee theft, to the tune of over a billion dollars each week, and traditional security systems don't catch most of it. In contrast, the NOX system allows security officers to see theft as it happens…and what else?

In the UK, millions of surveillance cameras have been installed next to streets and in shopping malls and other public places. The national government recently had to issue tough new rules to prevent abuse by local governments that were using the technology intended to prevent serious crime and terrorismin order to catch litterbugs and other minor miscreants. Home Secretary Jacqui Smith complained: "The Government has absolutely no interest in spying on law-abiding people going about their everyday lives. I don't want to see these powers being used to target people for putting their bins out on the wrong day or for dog fouling offenses."

The Internet now carries vast amounts of data as satellite images on Google Earth. Since its introduction in the United States in 2007, Street View has spread across other countries with resulting privacy and security concerns. The British village of Broughton finally rebelled against intrusion of their privacy, blocking the road with a human chain to keep away a car from Google Street View that was shooting camera images of their houses and streets. In August 2009 the Swiss government demanded that Google take any Street View images of Switzerland off the Internet. Greece will not allow the camera cars on Greek streets. Noting that an individual does not have exclusive property rights from the street or overhead, Weinberger says that to escape the Google eye, individuals can live in a sparsely populated area away from cities, international borders, and other points of interest; or under a canopy of trees, and/or in an underground house.

In May, 2007 it was disclosed that Mexico is expanding its capability to tap phone calls and e-mail with an advanced system paid for by the United States government. In the field of law enforcement, the conservative Mexican government under President Felipe Calderon was increasingly ready to cooperate with the conservative U.S. government under President George W. Bush. The $3 million Communications Intercept System was sold by Verint Systems, a firm that specializes in electronic surveillance and was politically well-connected to the Bush administration. The system allows officials to track cell phone users as they travel and to identify callers by voice. According to contract specifications, the two governments would share any information acquired this way.

Calderon asked Mexico's Congress to amend the constitution to let federal prosecutors secretly record conversations between people suspected of serious crimes. Renato Sales, former deputy prosecutor for Mexico City, described the plan as similar to the Bush administration's use of secret wiretapping to combat terrorism. Like FISA, it would put the judiciary out of the loop. "Suddenly anyone suspected of organized crime is presumed guilty and treated as someone without any constitutional rights. And who will determine who is an organized crime suspect? The state will." Sales and others feared that the proposed amendment would bring in domestic spying of a sort that has been a problem in other Latin American countries such as Colombia.

After an attempted airplane bombing on Christmas Day, 2009, U.S. security experts are looking at a new Israeli technology that "reads minds" by projecting images onto airport screens and using hidden cameras or sensors to detect responses—darting eyes, or a slight rise in body temperature and heart rate that might indicate 'hostile intent.' But civil libertarians think this looks like accusing people of "pre-crimes" as in the film "Minority Report."

Since 2007, the U.S. military has been establishing a network of small air bases and surveillance operations across Africa to spy on al-Qaida affiliates and "other militant groups." Some State Department officials see problems with this militarization of foreign policy, saying that most terrorist cells in African countries are involved in local affairs and pose no security threat to the United States. Also there could be a popular backlash against such foreign surveillance, for fear it would turn into drone strikes and assassinations. Are unilateral, military

operations the best way to deal with the problems of weak and failed states? And could this surveillance also become directed against "militant groups" that oppose multinationals?

The rapidly expanding field of high-tech surveillance brings up fears of totalitarian control—and rightly so. Yet, there is one saving grace: spy secrets are no longer so secret. A film such as "Syriana" or a television series such as "MI-5" demonstrate this technology for our entertainment. Magazines for the military-minded carry ads for high tech tracking devices available to any wannabe soldier of fortune. With satellite reconnaissance, we reach the point that anyone can become a spy. Citizens can even spy on the spies. Sharon Weinberger says in *Discover* that two U.S. companies, GeoEye and DigitalGlobe, will sell commercial satellite imagery to just about any American citizen. Weinberger asks "Is the Pentagon ready for the era of radical transparency?" With a few thousand dollars you can buy "up-to-the-minute satellite images of Iran's nuclear sites, CIA headquarters, even the top secret Air Force testing site, Area 51, in Nevada." Or, view older images for free on Google Earth and other platforms.

Are we ready to live in a fishbowl? If not, how do we get back into the brook?

Private Police: Another alarming trend is the increased use of private security guards to replace police in U.S. cities. According to journalist Jeremy Scahill, these contractors have outnumbered sworn law enforcement officers since the 1980s and now number over one million compared to 700,000 police officers. Scahill says that in the aftermath of Hurricane Katrina

> private security poured in [with] armed operatives from companies like Blackwater, Wackenhut, Intercon and DynCorp….I interviewed Israeli commandos from a company called Instinctive Shooting International as they operated an armed checkpoint on Charles Street after having been hired by a wealthy businessman….The abuses by private security guards in New Orleans and elsewhere has not to this day been thoroughly investigated.

This privatization of security does not only occur after disasters. In a time of budget deficits, some U.S. cities are turning over more law-enforcement duties to private armed guards in order to save money. While many cities already have problems holding their own police accountable for brutality and extrajudicial killings, private security services are far less accountable. Scahill says the public needs to learn the answers to a number of questions before privatizing its security, such as what is the oversight system? What training will private forces have in respecting constitutional rights? Will private police have the power to arrest or the authority to use lethal force? If they are accused of violating civil rights, who gets sued?

The trend of privatizing domestic security was occurring at the same time that companies such as Blackwater were adding more military contractors in Iraq and Afghanistan. Scahill, author of *Blackwater: The Rise of the World's Most Powerful Mercenary Army*, says that in the second quarter of 2009 there was a 23% increase in the number of "Private Security Contractors" in Iraq and a 29% increase in Afghanistan that correlated to the publicized build-up of forces there.

It's Time for a World Spring

There is a time for departure even when there's no certain place to go.
~Tennessee Williams (Thomas Lanier)

Across the world democracy is threatened by corruption, corporate domination, militarism, media concentration, obsolete ideologies, and new surveillance technologies. The age-old lust for power keeps pushing authoritarians and tin-horn dictators into the limelight. What's to be done?

Could people from every country, *acting in concert*, make a significant change in the way our world is set up? Imagine this: it would be something like the Arab Spring and Occupy Wall Street and the February 2003 anti-war protest— this time to call for universal disarmament—and the 2010 Climate Action Worldwide, and Bono's campaign for 3rd world debt relief, and the 1980s Nuclear Freeze movement, Greenpeace and other environmental groups, punk bands, churches, and others all together in one shared demand for a different world that meets the needs of people and their planet. +++

Could we do this? What happens when the immovable object meets the irrestible force?

The power of inertia is mighty strong. The more complex and highly organized is some social institution, the harder it is for it to change. That's the problem with bureaucracies, or complex manufacturing processes, or churches, or governments. Technology has introduced a great deal of complexity, and it is very hard to give up a technology.

But we could remember two things about change. First is that we humans are extremely adaptable creatures and have been for several million years.

Second is a finding from history by anthropologist/historian Joseph Tainter that civilizations tend to get more and more complex—until they collapse. The civilization (or a part of it) collapses of its own weight, becoming smaller and simpler. Tainter says "The only real question is whether societies will contract and simplify intelligently or in an uncontrolled, chaotic fashion." We could simplify things *before* the collapse, saving ourselves a lot of suffering. The society in a controlled contraction is also more likely to be transparent and egalitarian.

Here's still more advice, this time from the American philosopher Ralph Waldo Emerson in his essay "Politics" in 1844:

In dealing with the State, we ought to remember that its institutions are not aboriginal, though they existed before we were born, that they are not superior to the citizen, that every one of them was once the act of a single man, every law and usage was a man's expedient to meet a particular case; that they all are imitable, all alterable, we may make as good; we may make better.

Society is an illusion to the young citizen. It lies before him in rigid repose, with certain names, men, and institutions, rooted like oak-trees to the centre, round which all arrange themselves the best they can. But the old statesman knows that society is fluid; there are no such roots and centres; but any particle may suddenly become the centre of the movement, and compel the system to gyrate round it.

Let us compel the global system to gyrate around the people's vision of a fair and sustainable world.

Chapter 8
Expand Democracy

If liberty and equality, as is thought by some, are chiefly to be found in democracy, they will be best attained when all persons alike share in government to the utmost.
~Aristotle, 384-322 B.C.

In all these situations of surveillance, government intrusion, and non-accountability, the best defense is public awareness and political resistance. But leaving for now these existing and potential problems, let us look at the good news. All over the world new forms of democracy and new democratic institutions are rising up. First we define democracy and consider various proposals for increasing citizen participation in government. Second, we look at several different ways to decentralize government, even touching on the thorny issue of secession. Third, we consider a new political paradigm—green politics and Green Parties. While non-political, Bioregionalism may be seen as both a framework for decentralized government and a more ecological way to organize human communities. Fourth, we consider the possibilities for extending democratic institutions to international governance.

Several Kinds of Democracy: Parliamentary democracies are the ones most familiar to us, but democracy can take other forms. The earliest type is *direct democracy* or pure democracy, a system in which political power or sovereignty resides in the assembly of all the citizens who choose to participate. The Athenian democracy 5th century B.C. was a direct democracy, although not a pure democracy, since only free men were citizens. Out of about 30,000 men, several thousand were politically active in a given year, many chosen by lot. The ancient Roman Republic also featured citizen lawmaking for about 400 years. New England town meetings are examples of direct democracy. Most indigenous groups have practiced this sort of governance, which may be seen as the 'natural' form of democracy for small, face-to-face groups.

The framers of the U.S. Constitution deeply distrusted direct democracy. Instead, they chose a constitutional republic. They limited eligible voters to men who owned property, leaving out women, indentured servants, poor working men, and, of course, slaves and the original inhabitants of the country. They further interposed intermediaries between the voters and their leaders such as the Electoral College and indirect election of the Senate until the 17th Amendment was passed in 1913.

Those who deify the men who framed the United States Constitution often overlook that the Founders had differing philosophies and disagreements amongst themselves. Mostly men of property that often included slaves, the signers of the Constitution identified with the propertied class to which they belonged (exceptions include Benjamin Franklin, Thomas Jefferson, and James Madison). Especially for the times, they did a remarkably good job, setting up the rules for a representative democracy that has lasted for over two centuries. It might not have lasted at all without the Bill of Rights, the heart of the document.

In contrast to direct democracy, *representative democracy* allows an elected subset of all the people to exercise sovereignty. One disadvantage of this system is the formation of political parties, which involve individual compromises to fit the party platform. Conventional wisdom holds that in all but the smallest polity, such as a village, representation is the only possible form of democracy, and virtually all modern democratic nations operate under parliamentary systems. Yet based on the historical existence of Athenian democracy, direct democracy might work in a

small city of up to 30,000 highly-motivated adults. Some hope that this upper limit might be expanded by the Internet. +++

A third form of democracy, *deliberative democracy*, incorporates elements of both direct democracy and representative democracy. Many representative democracies already allow the initiative, referendum, and recall to introduce an element of direct democracy. In the U.S., twenty-three states have the initiative and referendum process. Eighteen states and a majority of cities have recall provisions. Most recently in Wisconsin, opponents of Gov. Scott Walker collected 1 million signatures on petitions to force a recall election, but did not win the election. Wisconsin would have been the third state in U.S. history to oust a governor.

Such voting could be expanded via the Internet. Vladimir Putin, campaigning for reelection as Russia's president, said he would introduce a rule for the parliament to consider any legislative initiative with more than 100,000 supporting signatures on the Internet. Putin said that the UK already does this. +++

Deliberative democracy theorists argue that legitimate governing is only possible through public deliberation involving citizens. It rests on the idea that citizens or their representatives owe each other mutually acceptable reasons for their actions. Thus deliberative democracy favors consensus or supermajorities, as well as citizen participation. Since the 1970s new ways such as citizens' assemblies add direct democracy to parliamentary systems.

The three keys to deliberative democracy are the process of deliberation, citizen involvement, and respect for pluralism. It is not about instant opinions or spur-of-the-moment votes.

According to Wikipedia, the modern era of lawmaking by citizens began in Swiss towns in the 13th century. The Swiss added the referendum and initiative to their constitution in the 19th century and have had over a century of experience in their use, overcoming pitfalls seen elsewhere such as manipulation of a referendum by the title or framing of the issue, by political advertising, or by allowing too many referenda to be voted on at one time.

At the federal level, Switzerland requires "double majorities" on constitutional matters and initiatives, that is, both a majority of voters and a majority of states. The Swiss also have the Concordance system, which integrates the political opposition into the government. It requires first that the Federal Council should be representative of the country's political forces, with numerical proportions similar to those in the Federal Assembly (congress). Second, Concordance requires consensus or compromise even though the government is made up of antagonistic parties. It demands bi-partisanship (or tri-partisanship). +++

Switzerland is near the top of most lists both for its political stability and its economic success, so its political system is worth study. But political partisanship in the United States has obviously degenerated much too far for Concordance to work right now. A minimum threshold of good will and mutual respect is necessary for any sort of political institution to succeed.

For two decades, Brazilians have been innovating citizen involvement in government by way of participatory councils. Ordinary people serving on citizen-councils—*conselheiros*—meet monthly with those who plan and provide government services. Every two years, citizen-delegates meet with state-delegates at a conference to work on state policies. Every four years, there is a national conference that brings 5,000 citizens from across Brazil to debate policy. UK writer Andrea Cornwall says: "By giving people permission to dream, space to debate, chance to learn, opportunities to contribute to righting deep-rooted wrongs, Brazil is creating a nation of informed, politically engaged citizens." Their slogan is "*Brasil: um pais de todos*" (Brazil: a country for everyone). +++

The Iron Law of Oligarchy: Almost 100 years ago, a German sociologist, Robert Michels, declared that every form of organization will inevitably turn into an oligarchy, rule by the few. Michels said this is true whether the organization was originally organized democratically or autocratically. His "Iron Law" is: "Who says organization, says oligarchy." Michels's reasoning is this: leaders are indispensable, they tend to consolidate their own interests, and followers are grateful for leadership. Michels believed that people in general are passive and lazy and want to be led. Leaders, on the other hand, are persuasive, often charming, and know how to get their own way. They are leaders precisely because they have political skills.

Another reason for inevitable oligarchy is that any large organization requires a bureaucracy to coordinate it. Bureaucracies are hierarchies and concentrate power at the top for the sake of efficiency. Any large, complex organization, whether it is a business, government, or NGO, gives a lot of decision-making power to a few people. Leaders delegate decisions; delegation leads to specialized skills and knowledge bases among the top leaders that reinforce their powers. Leaders control the information that comes down the pyramid. They also have the power to promote those of lower rank who agree with them.

We need only look around at our places of business, our legislatures, and even our social organizations to see instances of democracy deteriorating into oligarchy (or, on the small scale, rule by cliques). According to Michels's theory, backed up by many historical examples, true democracy is practically impossible. Yet there are ways to get around the Iron Law. It does not apply as well to small groups lacking bureaucracies and specialization. A rapid rotation in office, such as rotating chairmanships or term limits in parliaments, can overcome the tendency toward oligarchy. And a number of new ideas and activities have developed in recent decades precisely to increase public participation in government and other areas, as follows.

Participatory Democracy: In order to participate in running their government, people need full information about how their government works. The processes of government should be transparent. Next, they need mechanisms for holding the government accountable. So the two prerequisites for participatory government are *transparency* and *accountability.* Some of the variations or other names for participatory democracy are grassroots democracy, consensus democracy, and deliberative democracy.

Grassroots democracy develops from the bottom up, from local people. In the United States, local citizens' groups with a shared problem, environmental or otherwise, often form spontaneously over some issue such as, most recently in my town, the intentions of several stone and red clay pits to greatly expand their excavation operations in an area of growing residential development. Grassroots organizations are rooted in a community, and decision-making power is exercised there as much as possible. Many contemporary movements in less developed countries are built around this concept. One example is Brazil's Landless Workers Movement (MST) with an estimated 1.5 million landless people who carry out land reform by land occupation and other means in a country where three percent of landowners control two-thirds of arable lands. The Brazilian constitution states that land must serve a social function and if it does not, may be expropriated for the purpose of agrarian reform, but this process may take a long time, with violent episodes. MST is organized at all levels into collective units that make decisions through discussion and consensus.

Another example is Abahlali base Mjondolo in South Africa, a popular and democratic mass movement of shack dwellers and other poor people. Multi-ethnic, multi-racial, and multi-religious, Abahlali successfully protected its own settlements from ethnic conflicts that erupted

across the country in May 2008. Abahlali struggles against the Durban government's policies of slum demolition and its refusal to provide basic services such as electricity or sanitation to existing shack towns. It has succeeded in stopping many evictions and forced removals but has not yet won access to urban land for quality housing. Police were violently repressive in the mid-2000s but after their actions were internationally condemned and widely reported in world newspapers the harassment has declined. However, Abahlali is fighting a new law which attempts to enable rapid mass evictions and make resistance to eviction a criminal act.

Besides these eviction struggles and political campaigns, Abahlali has numerous activities that include training people in computer skills, starting crèches, running a 16 team football league, publishing a newspaper, producing a number of choirs and bands, and in many settlements, ending the practice of rent. Abahlali has a distinctive philosophy with three major ideas. A *politics of the poor* means that politics is conducted in places and at times accessible to the poor and in the languages they speak. A *living politics* means that one not based on theories but on the experiences of those who shape it and this is always developed democratically and in common. A *people's politics* is opposed to party politics, politicians, and even top-down forms of supportive NGOs. One of their slogans is "Talk to us, not for us!" +++

A third example of grassroots organizing is People Power II, a Philippine social movement that recently overthrew the country's corrupt president, former film star Joseph Estrada. (Twenty years earlier, People Power I had ousted another corrupt president-dictator, Ferdinand Marcos.) Filipino activist Nicanor Perlas describes how about 2,500 people met to elect a committee of 100 which met weekly, which elected a steering committee of 17 to meet daily. Because of prior experience, they more easily agreed on strategy, eventually issuing the call for a mass protest that brought out 1.5 million people and forced Estrada to resign.

Citizens of Argentina, middle and lower classes together, joined in a cooperative, grassroots effort to rebuild their country after its financial devastation in late 2001 and 2002. Argentina had once been the world's seventh richest nation. Decades of military leadership, IMF loans propping up the peso, and IMF-prescribed, multinational privatization of Argentinean companies led to a currency crisis, then to 25% unemployment, a collapsing middle class, and widespread hunger. Argentineans began a grassroots movement to reclaim their country. People gathered in hundreds of popular assemblies, in parks and plazas all over the country, to address problems in their communities. "The spirit on the streets and in the assemblies is that people can govern themselves," according to an article cited by Project Censored. Many people joined neighborhood economic networks or "barter clubs." Workers took over the running of abandoned factories whose owners were so deeply in debt that they had cut their losses and left. By 2002 there were about one hundred legal, worker-owned cooperatives, with another ten businesses a month taken over and run by the employees. +++

Citizen's Assemblies: In 2005, voters in France and the Netherlands roundly rejected a proposed constitution for the European Union, which required consensus of all 25 member-states in order to pass. Two professors of Public Policy at the John F. Kennedy School of Government commented that the EU required more democracy than a simple referendum, that national citizens must be actually incorporated into transnational decisions on such important matters. Pepper D. Culpepper and Archon Fung say:

> Neither the European parliament nor national plebiscites on inter-governmental treaties can effectively solve this problem....Europe requires new political methods that are more advanced and democratic than political marketing followed by plebiscites.

What are those new, more advanced and more democratic political methods? Culpepper and Fung suggest the EU look at the Canadian province of British Columbia for a model. Faced with a difficult problem—constitutional reform of the electoral system—politicians gave the job to a Citizen's Assembly composed of 160 citizens chosen at random from across the province. The Assembly convened on alternate weekends for several months to educate themselves then went back to their communities to receive citizen input in public hearings, town halls, senior centers, and classrooms. After more meetings, the Assembly decided, by a vote of 146 to 7, that a form of proportional representation called the Single Transferable Vote was the best voting system for the province. In a popular referendum, the proposal then won 57% of the vote.

In Canada the Citizens Centre for Freedom and Democracy has formed to expand the citizen assembly idea for all of Canada, achieving direct representation of the people outside of the political parties. They list some requirements for a citizen assembly to work: 1) "A transparent and fair system of selecting and inviting members at random, regardless of their political views, in numbers proportionate to each region, 2) A clear and fairly-worded question they are invited to resolve, 3) Easy access to fair and balanced information and expertise, 4) A structured and sufficiently lengthy process of nonpartisan debate, and 5) Maximum capacity for the…public to observe and comment on the proceedings, without relying on news media." +++

The Citizens Centre also proposes that the People's Parliament should be on-line, an idea that has not yet been tried. They point out that it is expensive to convene several hundred citizens in the capital city, and no government is likely to foot the bill for a new institution to compete with the status quo. Instead, a national citizen's assembly via the Internet could involve a far larger number of citizens informing themselves about the issues and making decisions.

Participatory Budgeting lets citizens in on municipal spending decisions. Ordinary city residents meet together and decide how to allocate a portion of the city's revenue for the coming year. This portion, typically less than five percent of the total budget, has to do with new investment, not funds that are already committed or required by law. The first full PB process developed in the Brazilian city of Porto Alegre in 1989 and has since spread to more than 200 cities on several continents. My own small city recently held a similar process, not labeled as PB, involving broad visions for the city's future. According to Participatory Budgeting UK, city groups may discuss areas such as transport and waste disposal to decide strategic priorities. Some studies suggest that PB results in more equitable spending of public funds, with clear improvements to the poorest neighborhoods. It increases transparency and accountability in government, and enhances community participation in local decision-making.

Consensus democracy applies consensus decision making to the process of legislating in a democracy. It takes into account a broad range of opinions and encourages increased citizen participation in determining the agenda and making decisions. There are many historical examples of consensus decision-making by indigenous people such as the Iroquois Confederacy and religious groups such as the Anabaptists and Quakers. Some Christians point to Acts 15 in the New Testament as an example of consensus. Modern activists (women's liberation, anti-nuclear) helped spread the concept, and it is part of Western European political systems such as the Dutch Poldermodel. Consensus is an important part of the political process in countries such as Switzerland, Belgium, and Lebanon to prevent domination by one linguistic or cultural group. It is a good model for any country with several ethnic or cultural minorities.

In the Swiss canton of Bern a conflict developed in the 1950s because a French-speaking, Catholic minority felt overruled by a German-speaking Protestant majority. Conflict escalated, with frequent demonstrations and a few cases of politically-motivated arson. The government of Bern canton eventually agreed to hold a referendum in Jura to let people decide whether or not to form their own canton. They held a second vote in each of the six districts of Jura. The three districts farthest from the German-speaking part of the canton decided to separate, and in 1978 the new canton of Jura was accepted by the voters of Switzerland. Even so, small communities along the borderline were allowed to choose which canton they preferred to join. Dietrich Fischer says that the secret of Switzerland's long history of unity and stability may be that it allows a great deal of local self-determination. "Cooperation is the result of negotiations between all of the parties involved and is entirely voluntary, not forced upon them." +++

Even good ideas have their abuses. There are problems with supermajority requirements in a legislature that is so deeply divided along partisan lines that there exists little goodwill or spirit of compromise. David Roberts at *Grist* says that America (like California) has a serious political dysfunction: a procedural supermajority requirement combined with an extreme, unified minority that is willing to twist procedures to prevent any real debate or action. He says that 60 votes are now required to get anything done in the U.S. Senate, and proposes that the body go back to a majority of 51, as envisioned by the writers of the Constitution.

Decentralization and Size: Decentralization relates to human scale. And it must overcome ingrained human habits of depending on authorities and seeing bigness as a value in itself. But there are new trends afoot, based on new information. For instance, philosophy professor Michael Zimmerman says that neurophysiologists have accepted the possibility that the human brain does not have a central processing unit and that several sequences are going on at once. Applying this insight to society, Zimmerman says "It's possible that the brain has many different centers which interact—and it *works*. So we can imagine a society which is similarly decentralized, and it can work. We don't have to worry about holding it all together with a centralized, global control system."

There are several ways to overcome the problem of centralized power, applying the perspective of scale to government. Many decentralists have learned from Leopold Kohr (1906-1994) a political scientist who helped inspire the small is beautiful movement. Kohr grew up in the small Austrian town of Oberndorf, which became his lifelong model of a real and functional community. His major insight was that a great number of social problems are caused by bigness or oversize. In Kohr's seminal book, *The Breakdown of Nations* (1957) he says:

> If the body of a people becomes diseased with the fever of aggression, brutality, collectivism, or massive idiocy, it is not because it has fallen victim to bad leadership or mental derangement. It is because human beings, so charming as individuals or in small aggregations have been welded onto over-concentrated social units….If a society grows beyond its optimum size, its problems must eventually outrun the growth of those human faculties which are necessary for dealing with them.

In one sense the world decentralized over the 20th century as the number of nations increased from 55 in 1900 to 192 today. Many of the new countries were formerly colonies of empires. But most nations are still big and unwieldy, especially those put together for the convenience of imperial or colonial administrators without attention to cultural or biogeographical differences. In fact, many provinces and states within nations are also big and unwieldy. For instance, Martin Hutchinson maintains that California could be split into several states. With a population of 37

million, California has more people than most countries, and a larger economy than all but a handful of nations. Also, says Hutchinson, California is more diverse than most countries—ethnically, economically, and in terms of lifestyle differences.

California's urban, liberal, coastal communities are working at cross purposes with its rural, conservative, inland communities. Specifically, Proposition 13, a ballot measure passed 30 years ago, mandates a two-thirds majority to pass any new taxes. This hamstrings the larger cities and made it possible for a conservative minority to prevent any responsible action during California's current fiscal crisis, leading this wealthy state to face bankruptcy. Hutchinson suggests splitting the state into four smaller states similar in size to Michigan or Georgia, and says this could be done by the state legislature according to the California Constitution. Of course this splitting would have national repercussions, including the addition of six new Senators.

Devolution

Although criticism abounds concerning the rapid concentration of governmental power, world trade, domestic commerce and police authority—just to name a few—there is a stunning lack of alternatives proposed or even mentioned by media, politicians or intellectuals.
~*Sam Smith, "*A Field Guide to Devolution," *Progressive Review*

Devolution sounds like the opposite of evolution but its second, more common meaning is the transference of power from central government to more local subdivisions. This transfer is intended to increase efficiency of services and to encourage more public participation and democracy. Devolution has been a global trend since the early 1990s. Countries as diverse as Suriname, Venezuela, Pakistan, and Australia have worked to empower local governments and reduce federal power. The debate is important in India, where several political parties have long demanded greater devolution of powers to the States, according to a Keralan official.

In Sri Lanka, after defeat of a long insurrection by an ethnic minority, the dominant plan of political leaders was ethnic minority participation within a centralized national system. But academic observer Dr. Jehan Perera said a better plan might be independent decision-making within a devolved system of power, since "The purpose of devolution of power is to ensure that one section of the population does not feel that it is being unfairly dominated or being imposed upon by another section of the population or their political leaders."

Through many historical struggles European nations developed as conglomerations of many ethnic and religious groups. Devolution in Europe has been both peaceful and violent, and has its detractors and its cheering section. Some see the current set of boundaries as the best possible in an imperfect world. They value stability, sneer at tribalism, and fear balkanization—the breakup of a region into small and often hostile units, with the actual Balkans, especially the former Yugoslavia, as the prime example.

The former Soviet Union devolved, shedding its mostly Muslim outer states without bloodshed, and Czechoslovakia separated into the Czech Republic and Slovakia quite peaceably. Some areas in Europe with forces demanding more local autonomy are the UK (Northern Ireland, Scotland, and Wales), Spain (Basque, Catalonia, and Barcelona), and Belgium, where the Walloons in the south speak French and the Dutch in the north speak Flemish.

Local governments are demanding control of forest management in several Latin American countries where central governments failed to manage forests sustainably, while taking forest-related income. Decentralization might give more power to local elites or anti-conservation groups, but the general prognosis for decentralizing forest management seems to be good.

There is another side to devolution, with goals which are sometimes fiscal and have political/ideological overtones. In the United States in the 1990s the objective of devolution was to move social welfare programs from the Federal level to the states in the form of block grants. Senator Daniel Patrick Moynihan said that "The hidden agenda of the Devolution Revolution is a large-scale withdrawal of support for social welfare, no matter how well-conceived" and that states would compete with each other to reduce spending by depriving their own dependent populations. Other critics said Congress was missing the opportunity to devolve power to institutions at the regional level that would be far more effective than at state level.

Similarly, an Australian policy that encourages self-governing schools has the potential to increase inequality between affluent and poor areas. John Watt says in an educational journal: "The trend towards diversity and local control in public schooling should be seen as another aspect of [Australia's] shift to the right, which has, as its central social function, a sharpening of the differences between the schooling of the rich and the schooling of the poor, and therefore a facilitation of the inheritance of affluence and poverty."

In pursuing decentralization one must use discernment rather than ideology.

Secession and Separatism

The war of the colonies against the British empire was not a war of revolution, for no one wanted to take over London, but of secession, for leaving the empire; and there was even a peaceable tradition of it afterward, for Maine seceded from Massachusetts peaceably, Tennessee from North Carolina, and Kentucky and West Virginia from Virginia.
~Kirkpatrick Sale, "The Logic of Secession: Three Tines for a Trident"

Secession is the act of withdrawing from a political entity, peaceably or not. In the United States secession is an inflammatory word because one hundred fifty years ago men fought a terrible war over the right of the Confederate states to secede from the nation. Lately a couple of Republican governors have flirted with the idea. Former Alaska Governor Sarah Palin has been linked with the Alaskan Independence Party (AIP) which advocates a statewide plebiscite on the secession of Alaska from the United States. In spring of 2009, Governor Rick Perry of Texas made a comment suggesting that Texans might at some point get so fed up with the federal government that they would want to secede. Texas was a republic of its own from 1836 to 1845. Perry later emphasized that he is not advocating secession. Texas and Alaska are among the largest states in terms of area, and together they contain the majority of U.S. petroleum facilities. Those geostrategists who would expend immense amounts of money and blood to control oil in the Mideast are not very likely to let Texas and Alaska get away from them.

From a quite different ideological direction, some bioregionalists such as Kirkpatrick Sales propose a grassroots decentralization involving peaceful secessions from larger government entities. Indigenous peoples have also called for secession. A group of Lakota Indians announced in December 2007 their plan to withdraw from treaties signed by their ancestors with the U.S. government. The Lakota freedom activists said on their website the treaties were "worthless words on worthless paper" and had been repeatedly violated. They visited a number of foreign embassies seeking recognition for a free and independent Lakota nation that would consist of parts of North Dakota, South Dakota, Nebraska, Wyoming, and Montana. The Lakotas said non-Indians could continue to live there, but under a new government.

One form of secession is urban autonomy, like the ancient model of city-states that existed from ancient Athens, Rome, and in Renaissance Italy to the Greater London Council that was abolished by Margaret Thatcher. Singapore, Washington DC, and (until recently) Hong Kong could be regarded as seceded urban regions. While Paris and some other European cities are still quite autonomous, this is not the case in most of North America. When a large city's fate is dominated by state or suburban majorities, it often goes into decline. Urban theorist Jane Jacobs pointed up the clash of interests between those who regard the city as their community and suburbanites who see it as a marketplace. For instance, the surrounding regions may support expressways that cut up city neighborhoods. Urban secession (forming a new political unit) may become of more importance as the suburbs die or turn into self-sufficient towns and cities. +++

Secession is not some fringe idea. A Zogby poll in July, 2008 found a sizeable minority of Americans, 22%, believe that "any state or region has the right to peaceably secede and become an independent republic."

Historically and world-wide, secessions have often been peaceful. In 1830 Belgium seceded from The Netherlands. In 1905 Norway seceded from Sweden. In 1970 Bangladesh seceded from Pakistan. In 2002 East Timor seceded from Indonesia. The dissolution of the Soviet Union, Yugoslavia, and Czechoslovakia in the early 1990s occurred by way of secession. But many countries are still struggling with secession, sometimes violently. One wonders why it is necessary to fight long and bloody wars like the one that just ended in Sri Lanka in order to keep a minority group as part of a nation. Why can't the Tamils or Kurds or Chechyans have their own state? Or at least such groups could have more cultural autonomy within their own regions, as the Basques and Catalans have won in Spain, and Quebec in Canada.

There are basic regional differences in the United States that are proving hard to bridge. In his *American Nations: A History of the Eleven Rival Regional Cultures of North America* (2011) Colin Woodard argues that the United States has never been a unity but is rather the result of shifting alliances between several distinct cultures. The present political split is much more complex than merely a division between 'North' and 'South.' Despite increasing tension between the two major culture-coalitions, Woodard does not advocate secession.

However, Chuck Thompson does propose this, in *Better Off Without "Em: A Northern Manifesto for Southern Secession* (2012), which strikes a chord with many Northern liberals. Thompson maintains that both of the country's major regions would be better off after a divorce. One could argue with his definitions of 'North' and 'South' for instance, he leaves out Texas from the latter. And what if the South, now a net recipient of Federal funds, became much poorer? What if its communities reverted to traditions of racial suppression? Thompson doesn't provide a road plan for secession nor suggest how to divvy up the national debt, petroleum reserves, and nuclear weapons stockpiles.

Some who advocate secession in the abstract will find thorny issues in real time. In the United States, the largest numbers of those who look kindly on the idea are unreconstructed Southerners, anarcho-capitalists, and right-wing ideologues like former Governor Palin. .

Green Politics is a new paradigm in electoral politics since the early 1970s when political parties with largely environmental platforms ran in Tasmania, New Zealand, Switzerland, and UK. Later in the decade green parties arose in Belgium and Germany, with Belgium the first in Europe to have Green members of parliament, followed by the German Greens, who won 27 seats in the Bundestag in 1983. Many Green Parties have been part of coalition governments at state and federal level; in Ireland and the Czech Republic they are currently part of the governing

coalition. A Green was elected Prime Minister of Latvia in 2004. There are now Green Parties on all continents and in most countries that have democratic systems, along with some that exist as underground organizations in nondemocratic countries in the Middle East and elsewhere. The leader of Kenya's Green Party, Wangari Maathai, won the Nobel Peace Prize in 2004, which gave added impetus to the organization of green parties in the third world.

Environmentalists may describe themselves as 'green,' but formally organized Green Parties follow a specific ideology and platform often modeled on the Four Pillars of the Green Party first defined by German Greens in 1979-80: ecological wisdom, social justice, grassroots democracy, and nonviolence. In 2001 the Global Greens, a network of Green Parties, gathered 800 delegates from 72 countries in Canberra, Australia where they agreed on the Global Greens Charter. This document committed them to global partnership and six principles: Ecological Wisdom, Social Justice, Participatory Democracy, Nonviolence, Sustainability, and Respect for Diversity. +++

In the United States and Canada, Greens have made little inroad in national politics and have focused on running for office at city, county, and state/provincial level. In 2008 Canadian Greens gained their first Member of Parliament when an Independent MP turned Green. By 2009 about 160 Greens had been elected to office in the USA including a few in state legislatures. The major obstacle to Green Parties in some English-speaking countries is ballot access. (This is true for all third parties.) The USA, Canada, and India inherited a "winner-take-all" political system from Great Britain, whereas most major democracies have proportional representation (PR). Winner-take-all strongly favors two-party systems. Typically, countries with PR represent more diverse points of view, have greater voter turn-out, and elect more women and minorities. +++

At times Greens ally with social democratic parties (Red-Green Alliance) for the purpose of winning an election or forming a coalition government. Less frequently they have made common cause with centrists. Green views are not monolithic. Although Greens prefer to position themselves as post-political, U.S. conservatives often identify them as leftists. For example, "International Speculator" Doug Casey claims that the green movement is a secular and dogmatic religion like Marxism, with only a "smattering of science." The idea of Greens as socialists comes up frequently in letters to the editor and blogs. In the face of opposition from the right wing and marginalization by both major parties and the media, Greens face a large task of educating the public about who they are and what they actually stand for.   A North American Green Party with equal access to the ballot process would distinctly change the landscape of American politics, especially in alliance with other parties. +++

World Parliament

The Parliament of Man, the Federation of the World…
                    ~Alfred Lord Tennyson, from the poem "Locksley Hall," 1842

UK writer George Monbiot strongly supports a world parliament, first envisioned in a poem by Tennyson during Victorian times. Monbiot says the idea "is at last acquiring some serious political muscle" with support from almost 400 MPs from 70 countries, many artists and intellectuals, government ministers, former foreign secretaries, and a former UN Secretary-General. Monbiot emphasizes that this proposed World Parliament is *not* a plan for global governance but instead a way to hold to account the international governing bodies that already

exist such as tthe UN Security Council, World Bank, IMF, and World Trade Organization. These global governing bodies make decisions without our consent and are too removed from direct citizen participation to speak for us, he says.

The proposed world parliament would differ from the UN General Assembly which represents the interests of nation-states. It would not have any special powers but could put a check on these other international bodies because it would have what they do not, the legitimacy of being democratically elected. Monbiot says the world parliament would at first be made up of members of national parliaments and gradually move towards direct representation. Monbiot would prefer direct election from day one, because it would confer greater legitimacy and because members of national parliaments are not necessarily international thinkers. I would think direct election is essential. A respected advisory body that does not represent individual nations but humanity as a whole could well be exactly what the world needs, and soon. It should speak for the 10,000 nations and not only the 190 nation-states. +++

Another kind of advisory group to speak for the species would be a council of elders from the world's religions and indigenous cultures. While conferences have been held, there is not yet an ongoing entity. However, a group of experienced individuals known throughout the world for their work to advance peace, reconciliation, democratic governance, and justice has existed since 2007. Several members have earned Nobel peace prizes. Nelson Mandela marked his 89th birthday by introducing this group called The Elders to include himself, Desmond Tutu, Kofi Annan, Jimmy Carter, former Irish president Mary Robinson, Aung San Suu Kyi, Muhammad Yunus, and others. Mandela said the Elders could work on global crises which governments can't or won't deal with, working both publicly and with behind-the-scenes diplomacy. +++

A way to give the world's people direct voice would be to hold species referenda on issues that affect every one of us and our future descendants, such as genetic genome engineering and universal disarmament. This kind of referendum would not have the force of law without a government to enforce it, but it would give a strong message about the direction people want to go. Such referenda would of course be preceded by widespread efforts to inform and to discuss the issue, so that people's vote would be based on deliberation. +++

Note that these are four separate proposals to increase the voice of species members regarding issues that affect humanity as a whole. All of them could operate simultaneously. They are: a World Parliament, a Council of Elders (representatives of religious groups and indigenous people), the Elders (already in existence as a group of notable people who have worked for peace and justice), and world-wide referenda about issues that concern the whole human species.

Chapter 9
Can We Reform Capitalism?

Only when the last tree has died and the last river been poisoned and the last fish been caught will we realise we cannot eat money.
~Cree Indian Proverb

Currently, and probably for some time to come, the world's economies are in deep trouble. In the UK, the Chancellor of the Treasury forecast "the steepest annual slump since modern records began." The IMF predicted that the average government debt in the richer G20 countries will exceed 100% of GDP in 2014. Businesses are closing, people losing their jobs and homes, and

across the world more people are hungry. While the U.S. Dow Jones average is currently booming again, individuals and families are not, and there are still possibilities of a double-dip recession and lasting high levels of unemployment. Many of us wonder when the other shoe will drop—more foreclosures, credit card derivatives, student loans.

One problem is that in the Internet Age the virtualization of money is outstripping old economic realities about producers and consumers. On the global scale, economist David Boyle pointed out in 2003 that there is less money in the economy than there is outstanding debt and suggests the inevitable outcome is that financial institutions will end up owning everything. Boyle asks how we can sustain the world's financial system

> when speculation is now more than 20 times as powerful as trade, and has more than 20 times as much financial clout—and when the people who run the system in Tokyo, London, and New York have more to gain from instability than they do from stability? How can we possibly organize a reliable system of global investment when the financial underpinning—the combined reserves of all the central banks in the world—could now be overwhelmed in just a few hours of foreign exchange trading?

Monetary specialist Bernard Lietaer says that in this "global casino" $2 trillion are traded every day in foreign exchange markets, but only two percent of these transactions actually relate to real goods and services, while 98% are purely speculative. A Frontline program estimated the world's secretive, over-the-counter derivatives market at $595 trillion, while the Bank for International Settlements estimated it at $743 trillion: either way, this market would be about ten times more than world GDP. It is barely under control. International bankers such as Barclays, JP Morgan Chase, and Citigroup can manipulate the Libor rate—an interbank interest rate critical to that multi-trillion dollar derivatives market—without any real punishment for the bank, though a few top executives may be lost in the "scandal."

My state recently voted for a state lottery system despite strong opposition to gambling. I wonder if people realize how much of our economic system is based on some form of gambling—insurance policies, 'leverage,' any investment that bets on prices going up (or down). But just how did capitalism turn into a system dominated by wanton boys playing games with virtual money? And what does any of this have to do with the means of production, or the laws of supply and demand?

Economist Robert Reich says that our system has now evolved into 'supercapitalism': "turbo-charged, Web-based, and able to find and make almost anything just about anywhere." Reich says this supercapitalism is driven by technology, globalization, and deregulation—forces that intensify competition and attract investors. But the negative consequences include a growing inequality across the world, instability (as we have just seen), destruction of the environment, rampant consumerism, reduced job security, and the power to drown out citizen voices.

More and more people are disenchanted with the current economic system, and many predict its days are numbered. Some doubt whether it still is capitalism—or has it turned into some new and self-destructive monster? Even Alan Greenspan, former Chairman of the U.S. Federal Reserve, admitted (in his usual convoluted language) "I discovered a flaw in the model that I perceived is the critical functioning structure that defines how the world works." At Davos, where the 2012 World Economic Forum was meeting, French President Nicolas Sarkozy reportedly asked Jamie Simon, CEO of JP Morgan Chase, **"A**re we in the market economy or in a madhouse?"

Prescriptions for the ailing economy vary from band-aids and aspirins to a brain transplant. Here let us try to rise above ideology long enough to consider the following divergent, complementary, and sometimes contradictory ways to go about changing our economic world. In general, our three choices are: A) Reform contemporary capitalism; B) Replace it with some other system, such as socialism; C) Develop new economic institutions based on various other paradigms. Each choice contains a number of possible strategies, briefly summarized here.

A) Reform

The 2008 world crash began in America, catalyzed by derivatives. It was widely agreed here and abroad that the United States needs to regulate its financial markets. Amy Domini, founder and CEO of Domini Social Investments, says the first step is more aggressive enforcement of existing regulations, the second to rein in the largely unregulated private equity and hedge funds or *shadow banking*. Domini says: "The SEC must develop reporting mandates, capital requirements and strict governance standards, including independent directorships, for hedge funds and private equity funds." She also advises reinstating the uptick rule, which over several decades prevented investors from manipulating stock prices in order to sell stock short; it was reversed in 2007.

The 2010 Dodd-Frank Wall Street Reform Act did not deal much with shadow banking. Nor did it re-enact the basics of Glass-Steagall, a law passed in 1933 to prevent another speculative frenzy like the one that led to the 1929 Crash and subsequent Depression, by limiting banks to either commercial or investment functions, not both. Under pressure from the financial industry, Glass-Steagall was dismantled piece by piece during the 1980s and '90s. Dodd-Frank did increase regulation of OTC derivatives but with many exceptions and delays in implementation.

Unlike the Resolution Trust Corporation that cleaned up the savings and loan crisis in the 1980s, regulators in the 2008 TARP did not demand that banks open their books and clean up their balance sheets, nor were executives prosecuted for misleading investors and other crimes. Thus the same risky behavior could continue and a similar banking crisis may recur.

One problem that complicates financial regulation is that as many as eight separate agencies are responsible, such as the FDIC, Securities and Exchange Commission, Treasury Department, and Federal Reserve. A newly created Oversight Council is supposed to coordinate all of them. The states are also involved in banking regulation.

A root cause of financial crisis may be that the combined financial, insurance, and real estate sector of the U.S. economy is far too large, amounting to more than one-fifth of GDP (21%). This is much larger than manufacturing or any other single economic sector. The term financialization refers to a "pattern of accumulation in which profit making occurs increasingly through financial channels rather than through trade and commodity production," according to UCLA Professor Greta Krippner. Turning over money becomes more profitable than providing actual goods and services. U.S. financialization grew since the 1970s when Milton Friedman's free-market doctrines provided the ideology behind deregulation of banking and investment.

The largest single sector of the U.S. economy is real estate, including rental and leasing. It is larger than all government together—federal, state, local, and military. In 1998, economists Erik Reinert and Arno Mong Daastøl asked "What are the long-term consequences if an increasing percentage of savings and wealth, as it now seems, is used to inflate the prices of already existing assets—real estate and stocks—instead of to create new production and innovation?" In 2008, they may have received their answer.

Structural problems in capitalism need attention: its addiction to unsustainable economic growth, tendencies toward monopoly, and systemic unemployment and underemployment. In the United States income inequality has been growing for three decades. The wealthiest grow ever richer, while the middle class shrinks. One strategy is rebuilding labor unions as counterweight to the power of corporations. Some of us remember that U.S. unions were at their height of influence in the 1950s, an era fondly remembered as an economic Golden Age with an expanding middle class. (But Robert Reich calls it the "Not Quite Golden Age," since it still left out minorities and women.)

At a deeper level, capitalism to survive must change its entire orientation and recognize its dependence on natural capital, that is, ecosystem services, natural resources, and human intelligence. This orientation is *ecological economics* and the new kind of economic system has been called *natural capitalism*. In the forefront of building a better capitalism are idealistic innovators (social entrepreneurs) who start companies that produce healthier and more sustainable products and services. One side-effect of their efforts is that other businesses now feel obliged to claim that they are green too (although often this is merely green-washing). The new green businesses are reinforced by green and ethical consumerism, socially responsible investing and shareholder activism. Responsible investment in more enlightened businesses also takes into account corporate labor policies and the behavior of companies abroad.

Another vital strategy to reform capitalism focuses directly on reducing the power of large corporations and their governmental undergirding. The international anti-globalization movement acts mainly through mass protests to increase public awareness. Counties and small cities take actions against encroachment by large and powerful corporations. Political activists oppose specific corporate subsidies and bailouts. A new movement in the United States would add the 28th Amendment to the Constitution in order to prohibit corporate personhood.

B) Ditch Capitalism

We're taught that there are only two possible economic choices: capitalism—a system in which rich people and corporations have the power, make the decisions, and control our lives; or communism—a system where state bureaucrats have the power, make the decisions, and control our lives. What a choice! Suppose we try a different story.
~Ethan Miller, *Yes! Magazine*

A second major direction would replace capitalism with socialism. More than a quarter of the world's nations have socialist parties actively engaged in government. But in the United States several conceptual and practical difficulties lie in the way of socialism. The term is surrounded by confusion and ignorance of history, and is used as a label to discredit liberal politicians and policies. Even proponents differ in their interpretations of socialism.

C) Alternative Economy:
C) Alternative Economy: The third major plan would create a new kind of economy, local and cooperative, with ways to bypass the international economic system as much as possible (or to coexist long enough to launch an alternative economy). This strategy is least known to the public, includes a large number of interrelated approaches, and probably has the most potential to create a satisfying and sustainable economy. One aspect of this third plan is to expand the number of local businesses and other associations built on cooperative principles, in which those who use the services also own it. These include food co-ops and other cooperative retail

businesses, credit unions, co-op housing, cooperative alternative schools, mutual aid associations such as building or burial societies, and informal cooperative groups such as babysitting co-ops, play groups, and carpools. +++

Other general approaches in plan C are to live more simply and to build local institutions to replace the corporate culture. These efforts are expanding now that many people have lost their jobs and sometimes their homes. They involve self-sufficiency at both the household and community level. Alternative food production, with community gardens, community-supported agriculture (CSA) and local farmers' markets, plays an important role. +++

Another vital part of this third strategy concerns alternative forms of money and trade. One route to neighborhood and community self-reliance is setting up local currencies and computerized barter networks or time banks. Another focus is on banks and lending systems of a different kind from those whose corrupt practices led to worldwide crisis. We can take our business to credit unions or smaller, community-based banks rather than the large banks which took absurd risks and created giant Ponzi schemes that were destined to crash. There is a Move Your Money project to help people transfer their money away from large banks. Ellen Brown suggests a "public option" in banking. Some banking institutions offer alternatives to interest and debt, such as Islamic banking and the JAK banks that began in Scandinavia. +++

An innovation with power for change especially in Third World countries is micro-lending at low interest rates. This comes in several different forms and can empower women in particular.

Industrialized nations need to forgive the crushing debts of poor nations that were often negotiated under immoral circumstances with repressive leaders who did not speak for their people, as described by John Perkins and others. In international legal theory, this is an 'odious debt.' Most recently there is a movement to forgive Haiti's foreign debts in the wake of their disastrous earthquake. In his book *Debt*, David Graeber says "We are long overdue for some kind of Biblical-style Jubilee: one that would affect both international debt and consumer debt."

An idea whose time may have finally come around is that of worker cooperatives, once vigorously promoted by Leland Stanford, the founder of Stanford University, as well as by the Populist Party of the 1890s. Today the concept has found its fullest expression in Spain. Another plan current 35-40 years ago that disappeared from public view is the guaranteed annual income, basic income, or citizen's wage. This approach has since developed in new directions including a global plan, so let us look at it again.

One more consideration in economic affairs is size. Adam Smith's 200-year-old theories, based on a model nation of small producers and shopkeepers, do not translate well into multi-billion dollar multinational corporations, a large financial sector, and businesses that are shared or virtual monopolies. In modern times E. F. Schumacher introduced the importance of scale into economic theory with the concepts appropriate and intermediate technology. He argued against the notion that very large systems are inevitably more efficient. Today, many economists suggest that banks called "too big to fail" are too big, period. Add the fact that small businesses provide most of the jobs and you have an argument for a much more decentralized economy.

Can We Reform the U.S. Financial System?

It is no longer a government of the people, by the people, and for the people, but a government of Wall Street, by Wall Street, and for Wall Street.
~Speech by Mary Ellen Lease, Populist leader, 1890

The U.S. economy is heavily weighted to the financial sector compared to, say, thriving Norway in which banks represent just two percent of the economy. A *Forbes* article says "Since the end of World War II, the financial industry as a percentage of GDP has quadrupled to its present 8.4%." In a recent *Forbes* listing of billionaires, by far the greatest number come from the finance and investment industry. Reportedly, Wall Street has five lobbyists for every member of Congress. In an unguarded moment, Sen. Dick Durbin of Illinois said on the radio that banks "frankly own the place"—he meant the Senate.

The financial sector resisted regulation in the late 1990s when Brooksley Born, prescient director of the Commodities Futures Trading Commission, tried to get inside the secretive black box of OTC derivatives to find out what was going on. (She strongly suspected fraud.) Born was muscled out by a trio of powerful officials—Alan Greenspan, Robert Rubin, and Larry Summers—even after the first big derivatives crisis in 1998 (LTCM) had alarmed some in Congress. Born, interviewed on *Frontline*'s "The Warning," said that without more transparency, capital reserve requirements, and other regulation of financial markets, the same problems are likely to recur. One essential step is to reinstate Glass-Steagall, a New Deal-era law which separated commercial and investment banking. It was repealed in 1999. More than a year after the 2008 economic meltdown, lawmakers in both parties were promoting a new Glass-Steagall law. But must we re-regulate every two or three generations, after repeated economic collapse, just because the logic and pressure of capitalism keeps driving politicians to deregulate?

One point of contention was the size of those banks that were getting bailouts. Speaking before a Congressional committee in 2009, Joseph E. Stiglitz, Nobel laureate in economics, said:

> We know that there will be pressures, over time, to soften any regulatory regime. …I think it would be far better to break up these too-big-to-fail institutions and strongly restrict the activities in which they can be engaged than to try to control them. Being too big to fail creates perverse incentives for excessive risk taking….The only justification for allowing these huge institutions to continue is that there are significant economies of scope or scale [but] *I have seen no evidence to that effect*. In short, we have little to lose, and much to gain, by breaking up these behemoths.

The UK (in even greater economic turmoil than the United States) announced in late 2009 the decision to break up Lloyds, Royal Bank of Scotland, and Northern Rock and sell off parts of their businesses to create three new banks. A government source said "We are keen to see greater competition in the banking sector as soon as possible." After a bailout totaling 1.2 trillion pounds, UK ministers reportedly believe that the 'Big Four' banks (Barclays, Lloyds, Royal Bank of Scotland, and HSBC) concentrate too much of the nation's financial servicesices [a shared monopoly]. The EU is also said to have a "get tough" policy on banking regulation and to favor more and smaller banks. There was pressure on the two biggest Swiss banks, Credit Suisse Group AG (CSGN) and UBS AG, to separate investment branches from their banking business.

In the United States, momentum was growing to break up big financial institutions such as Bank of America, JP Morgan Chase, Citigroup, Wells Fargo, Goldman Sachs, and Morgan Stanley. The first four each have more than $1 trillion in total assets and the others were close. This idea had support from two former chairmen of the Federal Reserve, Alan Greenspan and Paul Volcker, and later, several Republican presidential candidates (Jon Huntsman, Newt Gingrich, and Rick Perry). Huntsman noted that the six banking institutions control assets equal to 60-65% of U.S. GDP, or $9.4 trillion.

Sanford Weill, creator of Citigroup, agreed that big banks should be broken up, and that investment banking should be separated from banking. Citigroup was the first big bank whose

creation in 1998 required repeal of the Glass-Steagall law. Weill said he upended his views because "the world changes." +++

The breakup has not happened so far but in early 2012, the FDIC approved a new rule requiring large banks to show how they would break up their assets if they were in danger of failing. These so-called 'living wills' applied to 30 banks with more than $50 billion or more in assets and seven others with more than $250 billion in assets.

According to attorney/economics author Ellen Hodgson Brown, only five Wall Street banks control 97% of the U.S. derivatives market. Wall Street traders have computer programs that can move trades in microseconds, beating out ordinary investors. Brown says a 2009 court case, in which Goldman Sachs sued a former computer programmer for stealing its proprietary trading software, made it clear why Goldman Sachs always wins at this game.

 Stiglitz made many specific recommendations to Congress such as a Financial Product Safety Commission to assess which financial products are safe for consumers, an idea first proposed by Harvard Law professor Elizabeth Warren. The commission would also oversee non-bank lenders such as payday lenders, student lenders, and mortgage lenders. The plan was opposed by the Federal Reserve, and for some months Congressional Republicans refused to confirm a director once the measure passed. The Consumer Financial Protection Bureau or CFPB was part of the 2010 Dodd-Frank Wall Street Reform Act, which also included the Volcker rule to prevent banks owning or investing in a hedge fund or private equity fund.

Critics say that Dodd-Frank did not go far enough because it neglected the shadow banking system, a host of bank-like entities that emerged in the last decade as intermediaries between investors and borrowers—hedge funds, SIVs (structured investment vehicles), money market funds, finance companies, unlisted derivatives, and other highly leveraged, unregulated structures. This shadow banking contributed in large part to the 2008 economic crisis.

By August of 2010 the financial industry had spent $251 million on lobbying Congress while it worked on financial regulation reform, and Republican lawmakers continue to try to water down the Dodd-Frank Act.

There is also outright corruption. Many areas of corrupt business practices came to light in the 2000s, starting with Enron's gaming of various electric utilities. One could say that corporate corruption is endemic, but banks and investment firms head the list. For example, New York Attorney General Andrew Cuomo said a national network of investment firms and unlicensed agents are conspiring with government and political officials to develop business opportunities using state and local pension funds. In April 2009, Cuomo issued over 100 subpoenas to investment firms and their agents. Note that pension funds are not insignificant amounts of money—the New York state pension fund is valued at $122 billion. The fraud may reach to public pension funds in several other states including Texas and California. "It's the wild west of government relations and financial brokers," Cuomo said, "the worst of both worlds."

Meanwhile, the Bernie Madoff fraud uncovered in 2008 may be the biggest financial fraud in history at $50 billion, and some accuse the SEC of criminal negligence in allowing it to happen. In 2009 another 150 Ponzi schemes collapsed, losing $16.5 billion for investors.

In early 2012, the House passed the STOCK Act, which explicitly bans insider trading by members of Congress and their aides, a previously too common practice. Around the same time negotiators wrapped up the $25 billion settlement of a lawsuit brought by 49 states' attorneys general against the nation's five largest mortgage servicers – Bank of America, JPMorgan, Wells Fargo & Co., Citigroup Inc. and Ally Financial Inc.—for abusive practices in servicing of mortgages. It was said to be the largest federal-state civil settlement in the nation's history.

Central Banks

> *It is well that the people of the nation do not understand our banking and monetary system,*
> *for if they did, I believe there would be a revolution before tomorrow morning.*
> ~Henry Ford, 1863-1947, developed auto assembly line

Virtually all developed countries now have central banks such as the European Central Bank and the People's Bank of China as well as the U.S. Federal Reserve (the Fed). The first central banks were established in Netherlands, Sweden, and UK in the 17th century, the most recent ones in Brazil and China in the second half of the 20th century. These institutions manage each nation's or region's money supply by setting interest rates and reserve requirements. The central bank is the lender of last resort to other banks during a financial crisis. David Graeber notes "It's the Fed that has the power to print money. Banks are allowed to create virtual money by making loans at a fractional reserve rate established by the Fed."

In some senses the World Bank and International Monetary Fund have acted as the world's central bank. A recent Vatican report said the IMF was no longer able to stabilize world finance by regulating overall money supply or monitoring the amount of credit risk—also that the world economy needs an "ethic of solidarity" among rich and poor nations. In order to better deal with economic crisis, and keep rich nations from exploiting poor ones, the report called for the creation of a "global public authority" or "central world bank." While the ethical vision is worthy, one wonders whether a world central bank would really back up the Vatican's priorities.

Central banks are supposedly designed to be independent and free from political influence. It is hard to see how this could work in real life. In fact, it clearly did not work at the Fed in the years following the 2008 financial collapse; a GAO Report showed that more than $4 trillion in almost zero-interest Federal Reserve loans and other assistance went to at least 18 banks and businesses whose heads were current or former Federal Reserve regional bank directors.

Senator Bernie Sanders, who had inserted a provision in the 2010 Wall Street Reform Act that required the GAO to investigate potential conflicts of interest, made the details public on June 12, 2012, just as Jamie Dimon was to testify in Congress. Dimon, Chairman and CEO of JP Morgan Chase, was one of the Federal Reserve regional bank directors mentioned. Not only did the Fed provide a total of $391 to JP Morgan Chase, but it also provided the bank with an 18-month exemption from regulations meant to prevent certain risk-taking strategies. Sanders said:

> At a time when small businesses could not get affordable loans to create jobs, the Fed was providing trillions in secret loans to some of the largest banks and corporations in America that were well represented on the boards of the Federal Reserve Banks. These conflicts [of interest] must end.

The Fed decision in 2008 to bail out large banks by purchasing their assets—the Troubled Asset Relief Program (TARP)—aroused strong opposition that spans the political spectrum, with continuing calls from many economists and politicians to reform if not abolish the Fed. Pointing out that the Federal Reserve Board bears a lot of the responsibility for the current economic crisis by ignoring an $8 trillion housing bubble, some commentators would turn it into a much more accountable and transparent agency. For instance Dean Baker of the Center for Economic Policy Research says that conflicts of interest were designed into the Fed, which is largely run by the financial industry. Baker notes "There is no reason why the banks should have a special role in determining the country's monetary policy, nor why they should pick their own regulators." He

says the Fed should be a true public agency, with all its key officials appointed by the president and directly answerable to Congress—and with a great deal more transparency. +++

Economics professor Steve Keen would strip the Federal Reserve of all its regulatory, monetary, and emergency bailout powers, and turn it into a simple clearing house between banks. Some economists propose to move Federal Reserve functions to the Treasury, where they were conducted before 1913, or to the FDIC. Ron Paul libertarians want to abolish the Fed entirely. Occupy Wall Street protests have also targeted the Fed, and an early organizing effort stated "Above all, we aim to break up the global banking cartel centered at the Federal Reserve, International Monetary Fund, Bank of International Settlement and World Bank." A non-partisan commission could study how to reform or replace the Federal Reserve, but we predict that central bankers will not go away quietly.

Financial Transaction Tax (FTT)

Speculators may do no harm as bubbles on a steady stream of enterprise. But the situation is serious when enterprise becomes the bubble on a whirlpool of speculation.
~John Maynard Keynes, British economist, 1936

One popular proposal to slow down speculative trading is the Tobin Tax, named after James Tobin, a Nobel Prize-winning economist. Tobin proposed such a tax in the 1970s but at the time computer technology was in its infancy and could not handle the accounting problems. The original idea was to put a very small tax, 0.1-0.25%, on every foreign currency transfer being used to profit from exchange rate fluctuations. The Tobin tax could also raise large amounts of money. Even a tiny .005% tax could bring in between $30 billion and $60 billion yearly. Another version of the currency tax is the Spahn tax, after economist Paul Bernd Spahn.

Tobin suggested in 2001that such a tax might have slowed down the 1994 economic crisis in Mexico, the 1997 Asian financial Crisis, and the 1998 Russian financial crisis.

Other FTTs have come to cover a wider range of transactions. Brown says "high-speed speculative trades intended to manipulate markets for private gain could be slowed up considerably." A smaller speculative market would help stabilize the whole financial system. However some FTTs are intended to raise money rather than to curb volatility. FTTs are considered to be a relatively fair and equitable form of tax, and less susceptible to tax evasion than for instance a tax on banks. +++

Forty countries have now adopted FTT. From 1914-1966 the United States imposed a small tax on stock sales and transfers, and currently has a tiny FTT to support operation of the SEC. A bill introduced in U.S. Congress in November 2011 by Representative Peter DeFazio and Senator Tom Harkin proposed a 0.03 percent tax on stock, bond and derivative trades. It would take effect, if adopted, in 2013.

The Robin Hood tax campaign, based in the UK and run by a coalition of more than 50 charities and other NGOs, supports a package of financial transaction taxes averaging at about 0.05%. Their main object is not to calm markets but to raise money for international development, to help poor countries deal with climate change, and to protect public services in the home countries. The Robin Hood campaign has received lots of support since its beginning in 2010, from the European Commission, the leaders of France and Germany, UNICEF, over 1,000 economists in a letter to G20 finance ministers before their 2011 meeting, the Pope, and many

prominent figures including Bill Gates and Warren Buffett. Surveys suggest strong majorities support an FFT in UK and EU countries such as France, Germany, Spain, and Italy.

Some support the Robin Hood tax but only if implemented internationally. They point to an early attempt by Sweden to impose an FTT financial transaction tax which had the effect of driving over half of trade in Swedish equities to London. However, this did not happen with every country that enacted an FTT. French Prime Minister Nicolas Sarkozy, a strong supporter of some form of FTT, said in early 2012: "It would be better to have a worldwide [financial transactions] tax than one that would only affect a small number of countries, but if we have to wait for all the countries in the world to begin to set such a tax, it will never happen."

Alternatives to Austerity

> *The drive for austerity was about using the crisis, not about solving it.*
> ~Paul Krugman, "The Austerity Agenda," *New York Times*, June 1, 2012

The austerity agenda is a classic "funnel solution" presented as the only alternative to economic chaos. But economists such as Paul Krugman, Mark Weisbrot, Mark Blyth, and Irish economist Terrence McDonough call austerity a senseless approach. Blyth says that austerity hasn't worked at all, and he never expected it to work. "You can't cure debt with more debt…All you end up doing is shrinking the economy." Weisbrot argues that European authorities should reverse course, intervene to lower long-term interest rates, and support stimulus programs for economic recovery; also that some governments should consider leaving the euro if authorities insist on continued austerity and high unemployment. Even some U.S. Republican economists such as Martin Feldstein and Henry M. Paulson Jr. argue against all austerity, all the time.

The Greek and European economic situations are both more complex and simpler than the media indicate—and the problems are more solvable. Economist Ellen Brown puts forward a handful of creative alternatives for Greece and other countries. They do not require leaving the Euro, and at least three of them have precedents in the history of other nations such as Argentina, Canada, Ireland, Iceland, and Japan.

Brown notes that treaties binding the 17 nations in the Eurozone are just a set of agreed-on rules, and "rules can be bent, broken, or stretched, especially in crises." She points out that the European Central Bank (ECB) like the U.S. Federal Reserve broke a lot of rules in order to save the banks. What's sauce for the goose is sauce for the gander. "Rules that can be bent for banks can be bent for the people—not just the Greeks, but the Irish, Italians, Spaniards, Portuguese and others lined up behind them."

The *first alternative*, proposed by James Skinner of the UK's New Economics Foundation (NEF), is for the Greek government to issue drachmas for its own use within the country, to hire workers to build infrastructure and to expand social services, while bypassing the banking sector. This would put people back to work, spending and paying taxes. Skinner says "There is no law that states that there has to be only one currency." [And no law that only banks can issue money.] Argentina did something like what Skinner suggests, and rapidly recovered from its economic collapse in 2001. +++

Another possibility is a mutual credit system or ***complementary currency*** defined as a currency that operates separately or in combination with the national currency, and is not limited to a specific geographical area. Such a system helped save Switzerland from the economic ruin of the 1930s and has kept it economically stable ever since. Bernard Lietaer describes how the

WIR system began in 1934 with 16 businesspeople. Threatened with loss of credit and bankruptcy, they formed a mutual credit union among themselves, their clients and suppliers. The currency they created was identical in value to the official money but didn't bear interest.

Eventually one-fourth of all the businesses in Switzerland belonged to this WIR system (WIR is an abbreviation of the German word for 'economic circle' and also means 'we' in German.) During recessions the WIR business expanded in volume and during boom periods business expanded in the national currency. Lietaer says "The spontaneous counter-cyclical behavior of this little system helped the central bank of the country stabilize the economy" and such a system is needed in many countries right now:

> I propose businesses create such systems at whatever scale makes sense. This approach will prevent or reduce the strangulation of the real economy by the credit contraction. It will avoid duplicating the worst of the 1930s: massive bankruptcies, intolerably high unemployment and untold suffering. [It] can be set up in a fraction of the time it took in the 1930s. +++

George Kesarios, an economic analyst and business writer, has a *second alternative*. He points out that according to the law, the Greek central bank can perform any function that the European Central Bank can, including issuing euros. In fact it has already printed 44 billion euros (and the Irish Central Bank did so as well to provide "emergency liquidity assistance.") The Greek government could print enough euros to refinance its sovereign debt and pay the interest to itself instead of to the 'troika' (ECB, IMF, and European Commission). Brown says Canada borrowed from its own central bank for 25 years to rebuild its infrastructure and social programs without causing inflation or increasing its national debt. +++

In a *third alternative*, Greece could take advantage of a provision in the EU economic treaty to form a "publicly-owned credit institution" or national bank and borrow funds from the ECB at the generous rate of 1% interest. They could buy up the national debt with these funds. Then, (*fourth alternative*) they could impose a tiny FTT on all financial trades. With a tax of 0.3% the debt might be paid off in ten years. The FTT would also dampen speculation on both the drachma and the sovereign debt. +++

A fifth alternative would be the most drastic. To get rid of the otherwise crushing burden of interest, it is quite likely that one or more of these countries in recession will eventually default on their loans, as Iceland has done, and Argentina did a decade earlier. McDonough says the best solution for Ireland would be a state default. Instead of following the austerity course, he says Ireland should have separated out the good assets from the banks, reorganizing them in a state-run "Good Bank," and left the banks alone with their bad assets rather than bailing them out. +++

The euro bailout for Greece now mainly goes for interest on the debt. At current rates, Greeks could soon be paying more than their entire GDP on interest. Brown says that legally, a contract that is impossible to perform becomes void. Alexis Tsipras, leader of the left-wing Greek party Syriza that ran a strong second in the June 17 election, calls it an "odious debt," which in international law refers to a national debt incurred by a nation's leaders for purposes that do not serve the interests of its people. Legally, an odious debt does not need to be repaid.

Syriza's platform calls for a number of radical changes in Greece and the EU, including prohibition of speculative banking products and of transactions carried out through offshore companies, and the introduction of a guaranteed minimum income. The troika's attempt to restructure EU society, giving leadership to banks and bureaucrats, and rolling back progressive gains of the 20th century, has galvanized the Left in Greece and other European nations.

Changing the Structure

Every American who is willing and able ought to have the right to a job that pays a livable wage. If the private sector will not provide these jobs, then the public sector should be the employer of last resort.
~William Greider, "The Future of the American Dream," May 6, 2009

In December, 2011, the USA had about 27 million working men and women without a full-time job. Sociologist David B. Grusky calls them "a reserve army" composed of the unemployed, those who are involuntarily working part-time, those who have withdrawn from the work-force because they have given up hope, prisoners, returning soldiers, and students "who are holing up in colleges and waiting for the economic storm to pass."

But even in the best of economic times, not everybody has the opportunity to work as much as he or she wishes, as MIT economist Lester C. Thurow pointed out in *The Zero-Sum Society* (1980). Thurow noted that in the 50 years from 1930 to 1980 there was never full employment in peacetime (nor has there been since). Full employment could be defined as the smallest unemployment rate in American history, which was 1.2% in 1944.

In the most-developed nations, there are now mainly two kinds of jobs: high-paying ones that demand skills that few workers qualify for, and low-paying ones that they can't live on—so says public policy professor Harry J. Holzer. He adds that the good jobs once available to high school graduates have been automated or outsourced. Yet there is also high unemployment in the developing countries that get the outsourcing.

While current unemployment is high across the globe, some nations and some groups have much higher than average rates of joblessness. In December of 2011, the average unemployment rate in EU countries, 10.4%, was higher than that of the USA at 8.3%; but Spain and Greece suffered from much higher levels of 22.9% and 19.2% respectively.

Discussing unemployment, Thurow points out deep structural problems in U.S. capitalism. The USA saw a depression 1929-1940, war 1941-1945, recession 1949, war 1950-1953, recessions in 1954, 1957-8, and 1960-1961, war 1965-1973, recession 1969-70, severe recession 1974-1975, and another recession developing as he wrote in 1980, which lasted until 1982. Thurow says this is "not an enviable economic performance." Since then, there have been four recessions including the current severe one, and three major wars not counting the invasion of Panama. Six major wars and twelve recessions in 80 years is not an enviable record of any kind.

Thurow notes hypocrisy in the conventional wisdom that work is the only ethical way to receive income—in a society that can't seem to provide full employment. He says "We need to face the fact that our economy and our institutions will not provide jobs for everyone who wants to work. They have never done so, and as currently structured, they never will." He also notes an ethical distinction between protecting the failing individual and protecting the failing firm. Many U.S. administrations have provided 'bailouts' for large corporations and financial institutions, while the culture promotes individual self-reliance and the free market for the rest of us.

Along with the lack of jobs, the distribution of earnings among different groups of workers is unequal and, Thurow says, grew even more unequal between 1939 and 1977 for women workers. They earned 61% of what male counterparts earned in 1939, but only 57% in 1977. Thurow notes: "Forty years of rapid economic growth, yet women were farther behind at the end than at the beginning." Apparently the gains women made as welders and other skilled workers

during World War II did not last. After another 35 years and a new wave of feminism, American women have now progressed to earning 77.0 cents on the dollar.

This inequity in wages is duplicated throughout the industrialized countries. Among the 27 EU member states (and in Australia) there is a persistent gender pay gap of an average 17.5%. The U.S. gap of 23% ranks among the EU countries with the highest gaps, which includes Germany, UK, Austria, and Netherlands.

The United States also shows income disparities between whites and minorities, especially in the better-paid jobs available to college graduates. According to census figures released in 2008, blacks with a four-year bachelor's degree earned about 78% of the salary for whites with a similar education, while college-educated Hispanics earned 75%. But college-educated women earned only 60% of the income earned by male graduates.

Thurow's solution for these inequities is to open work opportunities for everyone that are equivalent to the 'good jobs' held by fully employed white males—and not just as a temporary measure during recessions. This would "create a socialized sector of the economy designed to give work opportunities to everyone who wants them but cannot find them elsewhere." +++

Since Thurow wrote, U.S. income gaps have grown much more, most noticeably between the middle class and the wealthiest one percent. David Sirota, author of *The Uprising*, points out:

> According to government figures, 1-percenters' share of America's total income is the highest it's been since 1929, and their tax rates are the lowest they've faced in two decades. [And] most of them benefit from IRS decisions to reduce millionaire audits and collect zero taxes from the majority of major corporations.

Not surprisingly, one-percenters can sway many lawmakers, elite journalists, and opinion-makers to see things their way. This growing disparity between the top 1% "and the rest of us" became well-publicized during protest actions by the Occupy movement in 2011.

UK economist David Boyle points out that in England and on the world scale, a persistently large proportion of the population has been poor for two centuries, ever since the beginning of the Industrial Revolution. He asks "Isn't it possible that the reason this continuing third of the [UK] population, and third of the world's countries, are still considered poor implies some hitherto undiscovered economic 'law' about money creation?"

A New Economy: Britain suffered the same financial crisis in 2008 that the United States did. The UK's New Economics Foundation believes this is the moment for widespread reforms, not just shoring up the system. Andrew Simms, Policy Director of NEF says:

> The financial sector has long since failed to do the basic job required of it—to underpin the productive economy and the fundamental operating systems upon which we all depend. These have been variously neglected, taken for granted, or cannibalized by finance. They include the core economy of family, neighborhoods, community, and society, and the natural economy of the biosphere, our oceans, forest, and fields.

Steps proposed by NEF include regulatory reforms and adding several newer, smaller-scale economic institutions that provide more local participation in the mixed economy. Later we describe these more local approaches under the strategy of bypassing corporate capitalism. Briefly, here are some of the 20 steps which could apply to countries other than UK:

Demerge banks that are 'too big to fail.'

Separate retail banking from both corporate finance (merchant banking) and from securities dealing.

Bring onto the balance sheet, rigorously check, and officially license all 'exotic' financial instruments.

Enhance economic support for the local economy by expanding the range of smaller-scale 'friendly' sources of finance such as credit unions, perhaps adding banking services to post offices.

Encourage the introduction of complementary [local] currencies to provide credit in tune with local needs while helping to inoculate the economy from systemic financial shocks.

Bank lending is not the only or best way to create money. Better to create new public money, free of interest, where necessary to cope with unprecedented financial emergencies, as loans to rebuild the infrastructure of productive local economies. The British Prime Minister Lloyd George did this during the financial crisis of 1914. The money should be repaid when the task is complete and then withdrawn from circulation. [*This is similar to one of Ellen Brown's suggestions.*]

Introduce a moratorium on crash-related home evictions and allow people to restructure their loans. If homeowners default, houses facing repossession could be taken into the stock of public housing.

Introduce and expand new or revived forms of home ownership such as mutual building societies.

Separate the cost of the land from the purchase price of the house. By taking the land out of the marketplace through a Community Land Trust, housing becomes much more affordable.

Computerized barter networks [LETS] or Time Banking can grow the core economy, engaging the skills and talents of unemployed, underemployed, and retired people in useful work.

Make taxation work by clamping down on tax havens and corporate financial reporting and changing international accounting rules. In general, tax more what we don't want such as pollution, and tax less what we do want.

Hold accountancy firms accountable.
Introduce a maximum pay differential, or maximum wage. Simms notes that a century ago, the business guru J.P. Morgan said that in order to provide motivation a company needed no more than a differential of 10 between its highest paid and lowest paid employees. Some Japanese firms impose limits on pay ratios. Simms says this issue matters because "highly unequal societies have a habit of falling apart."

   How few of these sensible policies have been applied or even mentioned in the media since 2008! There is still time to put them into effect. +++

 Rebuild Labor Unions

   The strongest bond of human sympathy outside the family relation should be one uniting working people of all nations and tongues and kindreds.
                                        ~Abraham Lincoln

   As I write, the Employee Free Choice Act (EFCA) is still working its way through the U.S. Congress. The bill's object is to make it easier for employees to organize unions in the face of union-busting techniques that often prevailed under the weak laws previously in effect. Many

employers have hired consultants to devise legal strategies to prevent unionization. Even after workers voted for a union, the employer could challenge the vote and delay election results for up to two years. For this and other reasons, union membership in the United States dwindled from 35% of workers in 1955 to 11.6% in 2007. Compared with other English-speaking countries, this relatively greater decline in union members seems to be yet another instance of U.S. exceptionalism. In 2007, Canada was 29% unionized, Australia about 20%, UK 28%, and Ireland 35% (2003). Swedish, Finnish and Danish unions had 70-80% of possible members.

When unions are strong, they expand wages and benefits for the entire working class, even those who do not belong to unions. The decline in union membership coincided with the growth of income inequality in the United States—inequality greater than in any other industrial country. As unions declined, middle class incomes remained stagnant for three decades, while the cost of housing, medical care, and higher education shot up. Pensions have virtually disappeared, and now foreclosures and unemployment have added to the misery for workers at all income levels.

One reason sometimes provided for U.S. union decline, besides employer hostility and lack of legal support, is the influx of women and teenagers into the workforce. It was said that these groups did not have a traditional loyalty to labor unions. Another reason is that higher wages led companies to move their operations to low-wage countries. And the economy shifted away from industrial jobs that were union strongholds to jobs based more on service and technology. But it is not clear why these trends affected the United States more than the other countries listed.

Augustus B. Cochran III, political scientist and labor lawyer, says that the South has long acted as a drag on unions. Its rural setting and slower rate of industrialization, its racial divisions and "traditionally deferential culture" contributed to a lack of sympathy for unions. Even more important, most political leaders and local governments have been frankly hostile to labor rights. Cochran says "The vast reservoir of unorganized, cheap labor in the South has hobbled unions nationally." Businesses could always threaten to move South and sometimes they did move. He notes that this hole in the labor movement was also a weakness of the New Deal Democratic coalition, leading to big omissions in social welfare measures compared with Europe: no national health insurance, children's allowances, paid parental leave, or mandated vacations.

While white working-class voters have not greatly changed their voting patterns, in the South white voters of all income levels have increasingly voted Republican. Many Southern working people are strongly against unions. Union membership by state varies from under four percent in North and South Carolina and Georgia, to over 23% in Alaska, Hawaii, and New York. Eight of the ten states with lowest union membership are in the South.

One factor might be the almost feudal, warrior culture of the English/Scottish borderlands which sent so many settlers to the colonies in the 18th century, greatly influencing those who settled the South and West (Greater Appalachia, in Colin Woodward's map). While they are lovers of liberty, willing to fight and die for it, Borderer descendants seem culturally disposed to follow hierarchical leaders, and this includes business leaders. As small farmers and tenant farmers who were comparatively as poor in this country as they were back in the Borderlands, many kept attitudes of fealty to leaders even as the excesses of the early Industrial Revolution radicalized their cousins in the cities. Also, most Borderer descendants follow some form of Calvinist religion, which of all religions is probably most favorable to capitalist theory.

The Borderlanders are also influenced by the Deep South culture of slavery, deferring to the local aristocracy of plantation owners, bankers, and mill owners. The exploitative view of labor as something performed by slaves did not disappear overnight, and both freed slaves and poor whites were often close to being serfs, without all the citizenship rights that they had on paper, in

the middle of a supposed democracy. Attitudes of contempt for working people and identification with the economically successful are still quite visible in Southern states.

Kevin Drum, an American political columnist, ties together the decline of labor unions with political changes that began in the 1960s. First, the New Left and the Old Left failed to appreciate each other, and ended up splitting the Democratic Party in 1972. American political parties have to draw their support from either labor unions or investors—as Drum says, they need money and muscle to survive. The Democrats were traditionally based on union support, but when the AFL-CIO failed to support McGovern in 1972, Democrats became less loyal to labor. Meanwhile business groups saw the Democratic split as an opportunity and began organizing with fervor, building up the Chamber of Commerce, starting up dozens of conservative think tanks, and founding the Business Roundtable of corporate CEOs.

The first goal was undermining private-sector unions by blocking labor reforms and rules against union-busting. By 1978 Republicans could defeat a modestly pro-labor bill despite a Democratic president and Senate. Drum says it became almost impossible for unions to organize new workplaces in the growing service sector, leading to their "long steady decline."

The decline of unions led to a decline in the power of the Democratic Party, which then turned increasingly to business for support and ended up responding to the concerns of high-income groups rather than the middle class—just like the Republicans.

As corporations have acquired more and more power, one might expect popular support for unions as a political counterweight. However, public support for unions has declined even as union membership has declined and is now at an historic low. The very weakness of unions means that they are no longer making gains such as the eight-hour day that benefit all workers. And the propaganda has had its effect. Since the 2008 recession, Gallup and Pew Research polls found those with a favorable view of unions were under 50% of respondents. James Surowiecki, financial writer at the *New Yorker*, says that one reason for the change from solidarity to resentment is "pension envy" of public sector workers whose salaries are similar but who were promised good retirement programs. Then the politicians underfunded these programs, leaving it to the taxpayers. Meanwhile, only 18% of private workers now have traditional defined benefit pension plans, because employers didn't want to pay for them.

Labor unions existed before the American Revolution and their members played a prominent role in it, yet the history of labor unions and labor struggles in the United States has been excluded from public school history courses. If unions want to grow and prosper, they need to find ways to educate the public at large about American labor history. Most people don't realize how much unions have done to improve working conditions and why they are still needed. It might help to revive International Workers' Day on May 1, a holiday which originated in the United States and is now a national holiday in more than 80 countries but is not officially celebrated here. Labor Day is a weak version that has lost its associations with working people and unions, being chiefly celebrated now as a long weekend before the fall school term begins..

In talk about unions, the particular situation of women is seldom mentioned. Most women in the United States with children under age 18 are in the paid labor force (71% of them). Yet these women with their extra responsibilities and expenses (especially for child care) earn on average 25% less than their male co-workers. And women are very much concentrated in low-wage jobs that do not offer benefits such as paid leave to care for a newborn or a sick child. The majority of low-wage jobs don't even have paid sick leave for the worker.

A report from the Center for Economic and Policy Research shows that union membership raises women's wages an average 11.2% or about $2 per hour. For women in the 15 lowest-paid

professions, the effect was even greater—14% higher wages than non-union workers. The study shows that a woman's chances of having employer-provided health insurance and a pension are twice as great by joining a union than by having a four-year college degree. A recent study found that women now account for 45% of unionized workers. According to Kate Bronfenbrenner, of new workers entering unions, 55% are women.

Some critics of the labor movement see it as too tied to negotiating benefits for particular companies and industries. In the 1950s and '60s labor gave needed support for civil rights, housing programs, and other social causes that affected the whole community.Veteran labor activist Larry Holmes says "If labor unions will …stop focusing on narrow legislation for their members, if they will go back to being social unions that embrace broad causes, we have a chance of effective change."

European labor unions did pursue this different path. Jelle Visser, labor expert at the University of Amsterdam, notes that "Historically, union movements in Europe have tried to achieve 'comprehensive' or 'inclusive' representation, extending beyond wage earners in employment." Many retired workers maintain their union membership with little or no dues. In Europe unions may include the self-employed, full-time students and apprentices, unemployed, those who perform voluntary (unpaid) work, and spouses of workers.

American unions could try this broader policy. Or we can imagine an alternative organization that does not directly compete with current labor unions, for reviving a sense of working people's affinity. This potential alternative could be called the AAWP—American Association of Working People. With a low fee for membership, AAWP could draw in a wide range of people—"the 99%." Benefits for AAWP members might include a magazine or online newsletter and direct aid in setting up cooperatives, credit unions, time banks, local currencies, and other tools of economic empowerment. (Since I first suggested the AAWP, several organizations have appeared online with the same name but not the same goals.) +++

The International Labor Organization (ILO) was created in 1919 as part of the Treaty of Versailles that settled World War I. The underlying idea was that lasting peace must be based on social justice. Even a century ago, leaders recognized the world's economic interdependence and the need to cooperate so that countries competing for markets did not force workers into inhumane working conditions. The Preamble to ILO's Constitution states: "…the failure of any nation to adopt humane conditions of labour is an obstacle in the way of other nations which desire to improve the conditions in their own countries."

In 2006, ten national and international trade unions merged to form the International Trade Union Confederation, representing 168 workers in 154 countries. Their mission is to protect global workers' rights and promote unity during an era of 'the race to the bottom.' +++

Youth Unemployed Everywhere

Both OWS and the Arab Spring are characterized in large part by angry, unemployed young people.

~Felix Salmon, Reuters

During the current economic crisis, young people were hit particularly hard. Worldwide they are almost three times as likely as adults to be unemployed. For instance, in Ireland the unemployment rate in early 2012 was 14.2% but the youth unemployment rate was over twice that. In Spain and Greece about half of youths under age 25 are unemployed.

In South East Asia & the Pacific unemployment for young workers was the highest in the world compared to adult rates. In South Asia young people are more than three times as likely to be unemployed. The Asia Pacific region is home to 56 per cent of the world's economically active youth population.

The International Labor Organization (ILO) said that the 2010 global unemployment rate for young people had risen to its highest recorded level. The global average was 13%, about 81 million youths. A report from the ILO warns of the "risk of a possible crisis legacy of a 'lost generation' comprised of young people who detach themselves completely from the labor market, having lost all hope of being able to work for a decent living."

.High levels of unemployment, especially for young people, are said to be one major cause of the protests known as the Arab Spring. According to IMF research in the MENA region (Middle East North Africa):

> Available statistics covering six countries—Egypt, Jordan, Lebanon, Morocco, Syria, and Tunisia— indicate that average unemployment has remained around 12 percent for the past two decades…. Unemployment in the region is largely a youth phenomenon. Young people, ages 15 to 24, account for 40 percent or more of the unemployed in Jordan, Lebanon, Morocco, and Tunisia, and nearly 60 percent in Syria and Egypt.

Youth unemployment in the United States is also very high. Using U.S. Government data, Mike Konczal notes "For 16-19, we are at the same level of youth unemployment for Egypt and well above the region as a whole. At the broader 16-24 range, we are above Syria and Morocco, which both saw large-scale movement in the Arab Spring." Felix Salmon says that U.S. youth unemployment is 18.1% and 31% for black youth, the sharp rise beginning in 2007. One big effect is a significant rise in student loan debt, which has now surpassed consumer debt in total indebtedness.

We can't look to large, established corporations to be the "job creators." New startups have accounted for nearly all of the increased employment in the American private sector over the past three decades, says Alan McCormick of the Legatum Institute. It is not likely to be a different story elsewhere.

Sub-Saharan Africa has high youth unemployment rates, estimated over 20%, that predate the current financial crisis. Young people aged 15 to 25 represent almost half of the continent's labor force. The high ratio of young people in the labor force is expected to increase for several decades more, due to high fertility rates. More than half of these youths are illiterate. Many have no skills in demand by the labor market. In other words, they are landless peasants and inhabitants of urban slums who do not fit into the world constructed by western capitalism.

There are also millions of young workers who have jobs yet do not earn enough to live on. An estimated 152 million young people—about 28 percent of all the young workers in the world—earned less than US$1.25 per person per day. Some say, well it's too bad that there are sweatshops, and that Apple's iPads are made by Chinese kids working in terrible conditions— but at least they have a job! That rationalization won't fly very far, though.

One conventional prescription for youth unemployment says that young people need more education and more marketable skills. However in many countries the more-educated youths are largely unemployed. And what specifically are these marketable skills? And are there actually markets for them?

Here's one more fact to digest: More than half of the world's workers earn their living by working in the informal economy (off the books/under the table). It's not the giant corporations

that provide most jobs, but small businesses and individuals who provide the basic goods and services that their neighbors need and want.

Global Economic System

The whole of the global economy is based on supplying the cravings of two per cent of the world's population.

~Bill Bryson, American writer

Across the world, many blame the current economic crisis on inadequate and inconsistent financial regulation led by the United States in its deregulatory fervor of the last 30 years. The world's economies are quite intertwined by now, and nations make agreements which they may or may not follow. For instance the Basel Accords I, II, and III were reached by representatives from central banks and financial regulators of all the major economies, but the Basel Committee on Banking Supervision (BCBS) complained in June 2012 that the EU, U.S., and Japan were not following the agreed-upon standards that followed the 2008 financial collapse. The new rules would more than triple the capital core or reserve ratio that banks are supposed to keep as a buffer in a fractional reserve lending system.

The new G-20, composed of the leaders of 19 of the world's biggest economies plus the EU, look for a new international financial agreement to replace the Bretton Woods system that was put in place in 1944 in a process dominated by the United States. The system does not reflect the realities of today's world, where nations such as China, Russia, Japan, France, Gulf Arabs, and possibly Brazil and India are making plans to use other currencies than the American dollar to buy oil, with the transition set for 2018. This move would effectively end America's power to interfere in the international financial system. Economist Rene Heeskens notes that using the U.S. dollar as the main global currency benefits this nation by at least $400 billion yearly.

Even centrist critics say the World Bank and the International Monetary Fund may have outlived their reason for being, which was to fund development and lend money to middle-income countries in financial trouble. Both institutions have promoted neoliberal policies for the past 30 years. Yet in April, 2009, when financial ministers and central bankers from a number of nations agreed to reshape the IMF, they *broadened* its mission so that it will now monitor the global economy and also lend to nations in trouble. The IMF has the ability to in effect print its own money and was planning to issue about $250 billion in its own currency. It also asks for pledges from major governments. But in May, 2009, more than 65 religious denominations, development organizations, and global poverty action organizations sent a letter to the leaders of U.S. House and Senate asking for hearings, transparency, and binding conditions for reform in the IMF if it is to receive $100 billion in new resources from the United States.

Neil Watkins, director of Jubilee USA Network, pointed out that the IMF still requires structural changes in the countries it lends to—changes that negatively affect the poor. In exchange for bailing out banks, everybody in general is supposed to sacrifice. Starting in 2010, the IMF in concert with the European Central Bank and EU (the 'Troika') imposed drastic austerity measures on countries such as Greece, Portugal, Ireland, and Italy very much like the ones previously imposed on non-European ones and with similar destructive effects on lower-income people and the overall economy, with skyrocketing unemployment rates and recession.

Steady-state economist Herman Daly says that the best course is to downgrade the IMF, World Bank, and WTO to "something like Keynes' plan for a multilateral payments clearing

union, charging penalty rates on surplus as well as deficit balances [to] seek balance on current account [and] avoid large capital transfers and foreign debts."

The Paradox of Growth: Under capitalism, all problems seem to be resolved by the magic elixir of *growth*. You see countless comments such as: "The only surefire cure for youth unemployment is strong, sustained economic growth." Growth is our *modus operandi*—but what exactly do we mean by this concept? Briefly, economic growth is an increase in the capacity of an economy to produce goods and services, often associated with new technology. It is also associated with population growth—which won't help unemployment problems, or not for long.

Historically, economic growth has depended on exploiting resources in new areas. Colonialism kept things growing for several centuries. Now the new resources would be in the world's remaining wild places, in forbidding regions like the Arctic, or in resource-rich but poverty-stricken countries that have weak, malleable, corrupt governments. A few entrepreneurs are still hoping to mine the asteroids.

The conventional wisdom rarely mentions automation anymore. Economic growth that depends on automation creates *fewer* jobs, not more of them.

There are limits to growth, because natural resources, energy sources and other necessary industrial elements are finite. We can't count on technological innovations to trick Mother Nature forever. Thus economic growth is a kind of hamster treadmill. Or you might say that our whole economic system is like a Ponzi scheme that depends on everything getting bigger and more complex until we run out of everything and/or collapse of our very complexity.

New Economic Ideas show the way that capitalism might survive, indeed the only way that humans can possibly survive with it. These post-classical economic theories are called green economics, ecological economics or EE. They are based on the idea promoted by Herman Daly and several others that economics is a part of the ecology—not the reverse. Green economists value ecosystems as services or natural capital, rather than as passive natural resources. They promote full cost accounting, or "the triple bottom line" which considers environmental, economic, and social impacts.

In 1999, *Natural Capitalism*, co-authored by Paul Hawken, Amory Lovins and Hunter Lovins, said that traditional capitalism doesn't conform to its own accounting principles because it does not assign value to natural capital and human capital. "It liquidates its capital and calls it income." The authors support democratic, market-based systems of production and distribution which fully value all forms of capital, that is, human, manufactured, financial, and natural capital. The authors say theirs is not a new theory, but "is based on the simple proposition that ALL capital be valued. While there may be no 'right' way to value a forest, a river, or a child, the wrong way is to give it no value at all."

'Green capitalism' is defined as advocating protection and preservation of natural resources within the context of capitalist economic growth and profits. Critics from both the left and the environmental movement see flaws in this approach. Elizabeth Barron says that green capitalism is a compromise strategy that has benefited business, but it does a disservice to the original ideals of the environmental movement, insisting that "green capitalism does not make sense given the conflicting ideologies of environmentalism and capitalism."

In green capitalism, true cost pricing (cost/price integration) would factor into consumer prices the full costs of deforestation, fossil fuel extraction, papermaking, and

similar processes that are part of producing basic products. But Heather Rogers asks "Is cost/price integration a realistic option?"

> If we were to assign the correct value to the things we use, they would become impossibly expensive. When calculating the environmental impact of a bag of potato chips, where does the accounting start—in   the chip factory or the potato field? With the manufacturer that produces the farmer's tractor, or in the battle fields that maintain U.S. dominance over global oil supplies? Who has the authority to establish and monitor such measurements?

A *steady-state* or *zero-growth economy* is the ultimate green economy. Herman Daly is the first modern economist to propose such a sustainable economic system with its stable or mildly fluctuating levels of population and consumption. He was anticipated by classical economist John Stuart Mill in the 19th century, who noted that "the increase of wealth is not boundless," Mill saw the stationary state as a vast improvement over what he was seeing. In fact, up until about 250 years ago, steady-state economies were the norm. Today we are accustomed to thinking that economic growth is necessary, so that steady-state may sound frightening: we'll all be out of jobs and in the breadlines. However, Daly says boom-bust cycles occur because our current economy is set up for growth, in contrast to a steady-state economy structured for stability. He says:

> No one denies that when a growth-economy fails to grow, the result is unemployment and suffering. The main reason to advocate a steady-state economy is precisely to avoid the suffering of a failed growth-economy because we know that, sooner or later, the growth economy will no longer be able to continue growing.

The *De-growth* movement advocates for the downscaling of industrial production and consumption. It opposes growth-based development whether capitalist or socialist, and whether or not it is called sustainable development. Instead, de-growth proposes no growth, or actual economic contraction. By moving from globalization to local economies and appropriate technology, humans reduce their use of fossil fuels. By changing from consumerism to voluntary simplicity, people can actually become happier and healthier.

The concept of de-growth builds on ideas such as Schumacher's, the Club of Rome reports, and earlier anti-industrial thinkers such as John Ruskin, Henry Thoreau, Leo Tolstoy, and Gandhi. The looming problems of climate change, peak oil and other resource depletion, and global pollution add to the urgency of a new paradigm not based on industrial production and fossil fuels. Nicholas Georgescu-Roegen is credited as the main theoretician of de-growth. His 1971 book *The Entropy Law and the Economic Process* was translated into French in 1979 and stimulated a strong de-growth (*décroissance*) movement there.

French philosopher Andre Gorz notes that "continued consumption of scarce resources will inevitably result in exhausting them completely. The point is not to refrain from consuming more and more, but to consume less and less—there is no other way of conserving the available reserves for future generations." Yet he says Georgescu-Roegen is the only economist to face this ecological reality. +++

Sustainable, Responsible Capitalism: For several decades, idealists informed by new economic theories and New Age ideals have been attempting to put ethical markets in place, to increase social investing, and to build a green economy, ideas which have gained traction since

the economic meltdown that became evident in 2008. "A *social enterprise* is a business whose purpose is to change the world for the common good," according to one definition. The concept became widespread in the 1980s and '90s, after Bill Drayton founded Ashoka, an international organization of philanthropic entrepreneurs. A similar institution is the Skoll Centre for Social Entrepreneurship at the University of Oxford Business School. Skoll's vice-president Lance Henderson says that social enterprise fills a void left by both business and government, and "Social entrepreneurs are very good at innovation and integrating sustainability into society."

One example of a social enterprise is VisionSpring, which manufactures eyeglasses in China and sells them in South Asia, Africa and Latin America for about $4.00 each. Its director, Jordan Kassalow, says that in the ordinary market, optical firms are all competing for customers in the industrialized and industrializing countries, ignoring four billion poorer people who may need glasses for their work, or to see the blackboard at school. Other social enterprise institutions such as the Aspen Institute and Skoll focus on educating and inspiring business leaders and students to develop socially and environmentally responsible businesses. More business schools are offering classes and establishing departments in social innovation, among them Stanford and others schools in Barcelona and Paris.

Some environmentalist campaigners are using the capitalist market to—for instance—buy up greenbelt land to prevent its being developed into urban sprawl. The UK's Charities Advisory Trust (CAT) buys pieces of land in the Shola forests of southern India, tiger territory, to protect them from tourist resort development. In a bid to prevent development of a third runway at London's Heathrow airport, Greenpeace bought an acre of scrubland directly in the path of the intended runway and registered thousands of members of the public as 'beneficial owners' on title deeds. To acquire the land, the government would be snarled in legal red tape.

Successful Icelandic businessman Orri Vigfusson found a way to reverse the 1980s population crash of salmon due to drift-netting ships—he bought out fishermen's licenses to fish. Vigfusson founded the North Atlantic Salmon Fund (NASF) in 1989. According to Dan Box in the *Ecologist*, NASF worked on a large scale "with Vigfusson brokering multimillion-dollar buyouts and government moratoriums in Iceland, the UK, Ireland, Greenland, France and Norway, among others." The salmon have returned to these northern seas in large numbers. Vigfusson received the Goldman Environmental Prize in 2007 that said he "represents a new breed of environmental leader who utilizes business skills and negotiating to effectively protect precious natural resources."

As for greening the economy, Alisa Gravitz, director of Co-op America, says:

> It's time to call in the superheroes of the green energy revolution—energy efficiency, solar and wind power, and plug-in hybrids—and put their synergies to work with large-scale deployment. This is a powerful way to jump-start the economy, spur job creation (with jobs that can't be outsourced), declare energy independence and claim victory over the climate crisis.

Gravitz suggests the government could issue long-term Clean Energy Victory Bonds modeled after the victory bonds in World War II which brought in the total amount of $185 billion (close to $2 trillion equivalent in today's dollars)! The bonds were bought by 85 million Americans in denominations as small as $25. Andrew Korfhage of Green America says that the new bonds, invested in cleaner forms of energy, would pay an annual interest rate based in part on the energy savings generated. Korfhage suggests the top three priorities for the bonds are renewable energy development, energy efficiency and conservation, and green transportation. +++

To reform capitalism, we need to transform individual attitudes as well. Doug Rushkoff says in *Life Inc*. that global citizens have internalized corporate values, so that profitability becomes our consensus reality. Rushkoff's remedy for this situation is "the slow subordination of corporate activity to social activity, and corporate behavior to human behavior." New models for business organization can humanize the corporation. Some consultants are in the business of aligning corporate and human values. At the same time, Rushkoff says, "By restoring our connections to real people, places and values, we'll be less likely to depend on the symbols and brands that have come to substitute for human relationships."

Fair Trade +++

Fair Trade is about transformation and this structural change only comes about by demanding and growing alternative models to the current system.
~Phyllis Robinson*, Fair World Project,* Spring, 2011

Fair Trade is a 65-year-old movement to help small producers, especially those in developing countries, using a market-based approach. As defined by FINE, an association of four large fair-trade organizations, Fair Trade is a trading partnership, based on dialogue, respect, and transparency, that seeks greater equity in international trade. The movement is supported by a number of international aid, religious, and environmental organizations such as Oxfam, Christian Aid, Amnesty International, Catholic Relief Services, Greenpeace, and student groups.

The movement began after World War II as a faith-based effort to provide livelihoods for European war refugees. It later spread to the Global South where small farmers were organizing themselves into cooperatives in order to gain access to credit, markets, infrastructure, and technical assistance. By 2007, Fair Trade retail sales had reached $1 billion in the U.S. and $2.5 billion world-wide. The fair-trade labeling organization FLO estimated that Fair Trade benefitted more than 7.5 million producers and their communities.

Fair-trade organizations certify sales in which producers receive adequate recompense for products raised or made in a sustainable way. They connect producers directly to customers, eliminating most middlemen. Basic Fair Trade principles are quite distinct from conventional trade:

Long-term direct trading relationships
Prompt payment of fair prices and wages
No child, forced, or otherwise exploited labor
Workers' rights to non-discrimination, gender equity and freedom of association
Safe working conditions and reasonable working hours
Investment in community development projects
Environmental sustainability
Traceability and transparency

Most fair -trade products are exports from developing countries to developed countries such as handicrafts, coffee, tea, bananas, honey, cotton, fresh fruit, and flowers. While these account for a very small part of total international sales, they can represent up to one-fifth of sales in their product categories to Europe and North America. For instance, an estimated 88 million pounds of fair-trade coffee was imported into the United States in 2008. Some chocolate makers are now

using the direct trade model established by the coffee industry, which is significant because chocolate is a $75 billion industry. An estimated 6 million cocoa farmers depend on it as do 35 million others involved in production and distribution of cocoa products. Currently 80% of the world chocolate market is dominated by a handful of large corporations (shared monopoly) such as Nestle and Hershey, which make widespread use of child labor in dangerous work conditions.

As with many other good ideas, the Fair Trade community has had to struggle with the possibility of cooptation. The fair-trade certifying agency Transfair USA recently changed its name to Fair Trade USA while courting large multinationals such as Chiquita and Dole. These companies have histories of labor abuses. While they may make minor improvements in working conditions, by supporting them one undermines the small farmers. However, other certifying agencies exist such as IMO (Institute of Market Ecology).

Fair Trade is one aspect of a larger movement, ***ethical consumerism***. Many people in wealthier countries intentionally buy products that they believe are made ethically and do not harm the environment or human health. Besides Fair Trade, a wide range of ethical consumer preferences exist: organic food, shade-grown coffee, recycled products, sweat-shop-free clothes and shoes, dolphin-safe tuna, or products that comply with religious standards such as kosher and halaal ; also items that are union-made, not genetically-engineered, and not tested on animals,. In addition, many are concerned with the ethics of companies—how 'green' they are, how they treat their employees, do they use child labor, whether they are involved in manufacturing armaments, how transparent are their workings. To force corporate social responsibility, individual consumers or organized groups sometimes use the boycott, a powerful tool. The organization Ethical Consumer has collected information about more than 30,000 companies. Ethical consumerism is likely to grow rapidly with the expansion of radical transparency as described earlier. +++

Tame the Corporations +++

I hope we shall crush in its birth the aristocracy of our monied corporations which dare already to challenge our government to a trial by strength, and bid defiance to the laws of our country.
<div align="center">~Thomas Jefferson, letter to George Logan, November 12, 1816</div>

Jefferson's fears were well-founded. After all, the Boston Tea Party was a protest against bullying by the British East India Company, one of the world's first multinational corporations (along with the Dutch East India Company). Powerful corporations were certainly not part of the Founders' vision. Jefferson had wanted one of the Bill of Rights amendments to read: "No monopolies in commerce." His contemporary, Adam Smith, had a most unfavorable view of corporations, seeing them as instruments for suppressing competition.

Corporations in early America were usually set up to accomplish a specific service to the public such as building a canal, and they were limited in time and powers. They gained additional legal advantages throughout the 19th century by way of corrupted state legislatures, and especially after a corrupt law clerk inserted corporate personhood into a U.S. Supreme Court decision in 1886—although the court had not even addressed the issue. Although personhood was not actually the law of the land, later decisions assumed it. By the early 1900s, "trust-busting" was necessary to rein in big monopolies. Another court decision in 1919 established that corporations have responsibilities only to their shareholders, not to their employees or the

community at large. Various decisions since have given corporations many of the rights granted to American citizens by the Constitution and its Amendments.

While many nations codify the concept of corporations as legal entities, the United States alone has given them rights of a natural person. But how could legal fictions be citizens, anyway? As Scott Klinger (Institute for Policy Studies) points out, humans depend on communities but corporations can ignore them. Humans need to pause for sleep and recreation, but corporations charge forward 24/7. Humans die, but corporations are immortal. Klinger says corporations want it both ways. They insist on political and civil rights guaranteed to human beings by the Constitution "while at the same time refusing to live within the constraints of human life in terms of longevity, size, accountability and support of the communities that grant them their existence." Corporations have become monsters of virtual reality—a blog poster calls them "immortal sociopaths."

On January 21, 2010, the Supreme Court removed all ambiguity and overturned a century of precedent by allowing corporations the same right to freedom of speech as natural citizens, in the form of unrestricted use of money to spend directly—and anonymously—on political campaigns. Previous restrictions dated back to 1907, including the 2002 McCain-Feingold Act. Justice John Paul Stevens in the dissenting opinion in *Citizens United v. FEC*, called it "a radical change in the law." He noted that multinational corporations controlled by foreign governments would have the same rights as American citizens to spend unlimited money on U.S. elections. Greg Palast, author of *The Best Democracy Money Can Buy*, suggested two of these new 'citizens' might be CNOOC, the China National Offshore Oil Corporation, or UBS (United Bank of Switzerland) which faces U.S. criminal prosecution for fraud and a possible billion-dollar fine.

The *Citizens United* decision was harshly criticized across the political spectrum. A *Washington Post*-ABC News poll taken after the *Citizens United* decision showed that 80% of U.S. citizens—Republicans, Democrats, and Independents—oppose the ruling. Some wanted to impeach Chief Justice John Roberts for misrepresenting himself to the Senate as an "umpire" who believed in judicial restraint during his confirmation hearings. But impeachment requires a two-thirds majority of the Senate, so this was politically impossible. Some Democrats considered legislation requiring shareholder approval before corporations spend money on politics. Fran Korten says Britain has required such shareholder approval since 2000.

Congress scrambled, but many of these plans were fingers in the dike. One longer-range plan with a great deal of momentum is to amend the U.S. Constitution so as to prohibit corporate personhood. Several groups sprang up in the first weeks after the Citizens United decision, with proposals for the 28th Amendment such as "Constitutional protections apply to natural, not artificial persons," or "A person is constitutionally defined as a human being." Occupy Wall Street strongly opposes corporate personhood and the Citizens United decision—this is one of its main reasons for being.

At this point, corporations control not only our economy but also our information flow and political process. Clearly, this is the moment for action, although corporations will strongly resist giving up any exceptional powers acquired undemocratically if not illegally throughout two centuries.

How can we end the corporate stranglehold on our planet? The major way to tame the corporations is to put legal restrictions on their powers. This involves much more strenuous enforcement of anti-trust laws already on the books, which in turn requires better funding of the two main U.S. anti-trust enforcement agencies, the Federal Trade Commission and the Justice Department's Antitrust Division. We might envision return to an older corporate model that

existed before the 1886 Santa Clara decision. A Constitutional Amendment could reserve personhood for natural persons. State attorneys general could consider revoking the charters of corporations that break the law, and state legislatures could change incorporation codes to an earlier form. Charles Derber, author of *Corporation Nation*, says that all corporations over $1 billion should be "public corporations" that serve public needs, such as those of early America.

William Greider notes that limited liability, while it lets corporations take risks in order to innovate, also encourages recklessness. There seems to be no fine large enough to stop corporate misbehavior. For instance, two multinationals, Hoffman LaRoche and BASF, control 80% of the world's vitamin market. For conspiring together to raise and fix prices, in 1999 they were found guilty and fined the largest criminal fines ever imposed in the United States, $500 million for Hoffman and $225 million for BASF. Yet these huge amounts were not enough to stop the two firms from continuing attempts to dominate the remaining 20% of the market.

Some corporations if they were actual persons would be found guilty of crimes against humanity. Robert Waldrop, director of a Catholic Worker House in Oklahoma City, suggests that we should treat corporate criminals the same as street criminals. Some of his measures are tongue-in-cheek, but not these two:

> Criminal corporations should lose all corporate welfare benefits and government contracts….
> Bring back the death penalty for corporations: the closure of the corporation, the forfeiture of its assets to its victims and/or the government, and the winding up of its affairs by a court-appointed receiver.

Corporations could also be taxed as they were in the past. Only 50 years ago, corporations contributed almost 22% of the federal budget; now their share is less than 13%, according to Klinger. The GAO reports that in 2005, the latest year studied, one-fourth of large U.S. corporations paid no federal income taxes whatsoever despite collective sales over $1 trillion.

Some towns and counties have taken direct steps to protect themselves from corporate intrusions and misbehavior. In Pennsylvania, local farmers felt swamped by enormous feedlots and sewage sludge operations. Now more than 100 Pennsylvania townships have used model ordinances drafted by lawyer Thomas Linzley that assert community rights to govern themselves and to prohibit damaging operations within the township. Citizens of Barnstead, New Hamphire used such regulations to keep their town from suffering the fate of others nearby whose underground water was being sucked up by bottling companies.

The town council of Halifax, Virginia now has an ordinance that bans "corporate chemical and radioactive bodily trespass" and establishes strict liability and burden of proof obligations for both corporations and government bodies in case of toxic pollution. Also, according to the *Ecologist*, the Halifax law strips corporations of their accumulated constitutional protections (corporate personhood) while they operate within the town.

According to Allen D. Kanner (a leading theorist of the ecopsychology movement) over the last decade more than 125 U.S. municipalities have passed laws that ban corporations from fracking, building factory farms, mining, extracting water for bottling operations, or dumping toxic waste. Kanner says Pittsburgh, Pennsylvania is the first large city to pass such an ordinance, which not only bans fracking but also denies corporate personhood and recognizes inherent rights of nature.

Two organizations that help communities draft local ordinances to protect themselves are the Community Environmental Legal Defense Fund and Global Exchange.

Some nations have laws to protect them from corporate monopolies. For example, Green candidate John Grey noted that India does not allow any corporation to open more than two stores. (Later however, in November, 2011, the Indian government decided to allow in foreign retailers such as Wal-Mart. This was followed by a day-long national strike and other protests.)

The second way to reduce corporate power is to create alternative economic institutions, which we will discuss shortly. You can focus on one approach or more: humanizing corporate culture, legal restrictions, and removing ourselves from corporate power to control our lives. Taming the corporations focuses on the United States because this country first gave free rein to corporations, dominates free-trade agencies such as IMF, and managed to spread the neo-liberal ideas of Milton Friedman across the world with the help of Reagan and Thatcher.

Anti-Globalization: First, let us better understand what economic globalization is all about, speaking of the modern form that began in the mid-1970s. Robert Reich, former U.S. Secretary of Labor under Clinton, says that globalization was impelled by a host of new transportation and communication technologies such as semiconductors, computers, fiber-optics, the Internet, new alloys and composites, and satellites. These innovations, developed in many cases by the Defense Department and NASA in the course of the Cold War, along with cargo containers and smaller, lighter products "drastically reduced the cost of moving things from one point on the world's surface to another." The supply chains are now worldwide, with European and Japanese firms following the same model developed by the USA.

Reich says that while globalization is usually media-framed as a competition between foreign companies and American companies, the real process of globalization is that American firms set up foreign factories or they contract for components with foreign suppliers. By 2006, almost half (48%) of goods imported into the United States were from American companies with operations abroad, and the figure would be much larger if it included components American companies bought abroad and products they purchased abroad and marketed in the USA under their own brands. The constant rhetoric about American competitiveness is misleading (and I would add, so is the constant rhetoric about improving U.S. schools for the sake of competitiveness— although they may need improving for other reasons).

University of California sociology professor William I. Robinson says the changes in technology including automation and robotization have made it possible for capital to move globally and this mobility makes capital transnational. This new transnational form of capitalism has replaced the previous form of capitalism which used the nation-state as the organizing principle. Robinson says "Globalization has increasingly eroded these national boundaries and made it structurally impossible for individual nations to sustain independent, or even autonomous, economies, polities and social structures."

The late scholar Theresa Brennan described the fundamental flaw of economic globalization in terms of time and space. Globalization expands everywhere it can and speeds up the processes of resource extraction and production of waste and pollution beyond the point that either nature or people can reproduce and regenerate. In *Globalization and its Terrors* she says that free trade and globalization policy inevitably degrade the environment. Brennan gives examples from NAFTA, which was supposed to invest billions in pollution clean-ups in the border area, but in its first seven years had not financed one project. She mentions legal disputes under NAFTA, four of them regarding the right to dump toxic waste and two regarding the right to pollute.

Not only is this globalization speed-up destroying the rest of nature but it also stresses human health, even in the rich countries, both physically and psychologically. Capitalist expansion

throughout the world has brought us to face with a potential future that requires four more planets. Consequently, Brennan's Prime Directive is this:

We shall not use up nature and humankind at a rate faster than they can replenish themselves and be replenished.

Brennan makes a distinction between the small business market economy and capitalism. She would "reserve the name capitalism for any economy which disregards the rate of reproduction of human subjects and natural things. Accordingly," she says, "real resistance to multinational capitalism now must take the form of protecting, improving and increasing small-scale production in the South, and, in the North, exploiting the contradiction—never sufficiently understood by Marx—between big business and small business." Socialism no more than capitalism addresses the interests of small producers. But, she says, an economy based on household and small-scale production is also based on the reproductive rate of nature.

Brennan proposes more varied ownership and more local production. In the short-term, she says, it is necessary to restore competitive capitalism instead of the increasing concentration that is still taking place. Instead of welfare, government should offer small business grants to local households, groups, and cooperatives, with micro-investment loans in the industrial countries as well as the global South. Brennan looks toward the union of two traditional opponents: advocates of social justice who use the universal language of rights together with those who identify with their locality or region and are traditionally more conservative. Bioregionalism is one movement that could meet Brennan's hopes; the Green movement is another.

While Reich is especially concerned with the effects of global capitalism on U.S. democracy, a number of people world-wide have joined to oppose the process of globalization because of its effects on the planet and humanity as a whole. The anti-globalization movement needs a better name—one that comes from the movement itself is "A Better World Is Possible." These activists are specifically against *corporate* globalization and *for* democratic and ecologically sustainable forms of globalization. Network members hold large demonstrations at meetings of global elite institutions such as WTO and G-8. The movement began in an international network called People's Global Action (PGA) that grew out of a Zapatista *encuentro* (gathering) in Barcelona in 1998 which had a great diversity of founding members, according to Mike Carr, geography professor at the University of British Columbia. The movement is still very diverse.

Carr says the PGA is one of several movements that in one way or another are attempting to revive or reconstruct civil society and create a more just and sustainable form of world economy and governance. Civil society is the sum total of civic and social organizations independent from government. It includes NGOs, civic clubs, all sorts of organizations based on personal interests, cultural groups, labor unions, consumers and consumer organizations including cooperatives, religious groups, sports clubs, environmental organizations, professional societies, academia, and the media. Civil society is considered the bedrock of a working democracy, and the domain most needing protection against globalization.

Daniel Goleman thinks radical transparency has the potential to reverse some of the worst effects of corporate globalism. A certification for products that meet higher standards in working conditions, health effects, and environmental sustainability would alert shoppers who, according to a study by Harvard professor Michael Hiscox, are willing to pay higher prices for such goods. I know first-hand from belonging to a consumer's co-op with several thousand members that such shoppers exist. The co-op staff keeps up with all three kinds of information related to its

products and publishes this in regular newsletters. Goleman points out how a transparent marketplace could help us become more efficient and ethical:

> Shoppers in Berlin or Brooklyn or Beijing could make informed choices that would speed the conversion of China's power grid from coal-belching plants to alternate sources, reduce the clouds of toxins that a Mexican farmworker inhales, upgrade working conditions in sweatshops in Vietnam, or enhance the health of miners in Africa.

There are already several kinds of certification with labels such as USDA Certified Organic, Rainforest Alliance Certified, MSC Certified (The Marine Stewardship Council), and Fair Trade certified. The Fair Trade label is to ensure that a fair price was paid for the labeled item, fair wages were paid to the workers who produced it, and it was produced in a sustainable manner.

Chapter 10
A Different Kind of Economic System

Economics as if people and the planet mattered
~Slogan of the New Economic Foundation

Now that capitalism has once more revealed its feet of clay, some in the United States talk about replacing it with socialism. A recent Rasmussen poll (April 2009) asking "Which is a better system—capitalism or socialism?" found 20% prefer socialism, 27% were unsure, while 53% prefer capitalism. Socialism enjoyed its greatest support among people under age 30, one-third of whom said they preferred socialism. However, the surprising results of this poll may reveal more about dissatisfaction with capitalism than they predict a U.S. movement toward socialism. The survey rests on the assumption that capitalism and socialism are the only two, exclusive choices rather than that we already have a mixed economy with elements of both these systems (and others). It also assumes that everybody agrees on the meaning of these words.

There is great confusion in the United States about what is meant by the word 'socialism.' Its opponents sometimes describe socialism in terms of today's European social democracies but sometimes in terms of historic totalitarian communist regimes, quite a different kettle of fish. Many of the public equate socialism to the 'welfare state' with state-subsidized pensions, health-care, child-care, and unemployment compensation. European countries often described as socialist by U.S. conservatives are in fact mixed economies and parliamentary democracies with a somewhat more comprehensive social safety net than the United States.

Another view of socialism assumes it has nationalized industries and central planning of large chunks of the economy. But most of Europe's social democracies, although they may own railroads, airlines, or utilities, do not own the majority of the means of production and they are not centrally-planned economies. Adding to the confusion, conservative pundits often use the late Soviet Union or the Peoples' Republic of China as the main examples of socialism, ignoring the social democracies of Europe and Canada. Socialists themselves do not view the former USSR as having been a socialist country and would call modern China 'state capitalism.'

Several streams of socialist thought exist, each with different theorists and histories. For example, socialism need not be centralized. In an interesting and carefully thought-out online utopia called Bergonia, the economy is described as socialist but it is heterogeneous and decentralized, with thousands of worker cooperatives federated into larger enterprises. This is a model that has been used in Spain in Mondragon.

Socialism is not currently a viable political choice in United States politics since ours is a 'winner-take-all' system without proportional representation. Only one member of Congress, Vermont Sen. Bernie Sanders, describes himself as Socialist. There is no large, organized Socialist Party. Labor unions have relatively little power. Most people have forgotten about our tradition of home-grown socialists such as Eugene V. Debs and Norman Thomas, or the People's Party of farmers in the 1880s and 1890s who called for government ownership of U.S. railroads, telegraphs, telephones, agricultural warehouses and grain elevators. The two major political parties share a common interest in preventing third parties from getting any traction or airtime.

For an idea of what current socialists propose, Gabriel McClosky-Ross (director of Social Democrats USA) lists: "national health care, re-industrialization, ecologically friendly mass transit, infrastructure repair, and eventually a democratization of our economy." This is hardly revolutionary. Instead of using labels such as socialist or anarchist—so misused in the past—I

prefer to present ideas on their own merits. Let's look next at some of the ways to bypass modern corporate capitalism and build a new, 'third way' economic system on the ground.

Cooperatives +++

A cooperative is a business that is owned by and operated for the benefit of those using its services or buying its goods. By banding together, members gain economic power, purchasing strength, valuable goods and services, and marketing opportunities.
~NCB CO-OP 100[R], a listing of the top revenue-generating U.S. cooperatives

Cooperative businesses—neither capitalist nor socialist—are an important part of many mixed economies, from Scandinavia to India. Co-ops are voluntary associations of people united to meet common needs through a jointly-owned, democratically-controlled enterprise which may be a consumer cooperative or producer cooperative. The cooperative movement has been around for several centuries. On the American continents, the first successful business cooperative was a mutual insurance company organized by Benjamin Franklin in 1752. In Europe the movement began mainly in England and France, often among weavers. One of the earliest was the Fenwick Weaver's Society which formed in Scotland in 1761, first selling oatmeal at a discount to local workers then expanding into other areas.

Welsh businessman Robert Owen (1771-1858) was called the father of the cooperative movement and helped to inspire its growth although his attempts to build whole communities based on cooperation did not succeed. By 1830 there were hundreds of co-ops in Britain but many failed until in 1844 the Rochdale Society of Equitable Pioneers, a group of 28 weavers and other workers, established the *Rochdale Principles* by which cooperatives have operated ever since. One form of cooperative important in the British Isles was the building society in which members pooled resources to build housing, using mainly their own labor. This should be of interest to Americans after the recent and ongoing economic crisis fueled by fraudulent securities based on subprime home loans.

The Rochdale Principles (current version revised 1995):

Voluntary and open membership
Democratic member control
Member economic participation
Autonomy and independence
Education, training, and information
Cooperation among cooperatives
Concern for community

Many countries have a strong cooperative tradition. Danish farmers had a long history of working the soil cooperatively from the time that the Black Death depopulated rural villages in the 1300s. This experience prepared them for later agricultural co-ops especially dairies and other cooperative projects such as co-housing. Denmark developed the model for cooperatively owned wind mills and now for wind farms. Co-ops such as the large retail chain Coop Norden have historically been an important part of Scandinavian economies. Europe as a whole claims over 22 million members of consumer co-ops. The Swiss supermarket chain Migros has about two million members, more than a quarter of Switzerland's total population.

India recently celebrated its Cooperative Centenary. The Cooperative Credit Societies Act was passed in 1904, after which farmers were able to pool their resources to obtain credit, buy supplies, and market their produce. Jawaharlal Nehru, the great Indian leader and its first Prime Minister, strongly supported coops. Nehru said: "My outlook is to convulse India with the Cooperative Movement or rather with cooperation to make it, broadly speaking, the basic activity of India [and] the common thinking of India." Today there are an estimated 230 million members of cooperatives in India. In areas such as the production of sugar, marketing and distribution of cotton, looms, and the processing and distribution of edible oils, the cooperative sector accounts for more than 50% of market share.

In the United States, agricultural cooperatives and rural electric cooperatives were introduced during the New Deal and are still widespread in rural areas. Europe has agricultural cooperative banks and most emerging countries are also developing agricultural cooperatives. Agriculture still forms the largest coop sector in the United States, with groceries second. Some well-known U.S. businesses organized as cooperatives are Ace Hardware, Associated Press, Best Western hotels, Blue Diamond Growers, Land O'Lakes, North American Steel Alliance, Ocean Spray, REI (Recreational Equipment Inc.), Riceland Foods, and Sunkist Growers. According to NCB Co-op 100[R], coops contribute over $140 billion to the U.S. economy each year.

Japan has a very active consumer cooperative movement, with over 14 million members. One of the more unusual co-ops is the Seikatsu Club Consumers' Cooperative Union, with membership 95% women. SC began in 1965 when a Tokyo housewife organized 200 women to buy 300 bottles of milk in order to reduce the price. Today the Co-op has over 230,000 member-households and emphasizes direct producer/consumer links. The SC refuses to handle products detrimental to either the environment or human health, for instance, they insist that the farmers they deal with will use only organic fertilizers and as few chemicals as possible. Seikatsu has also established a not-for-profit insurance company for its members. The Club promotes fair trade and encourages political participation, electing over 100 members to various municipal offices. Seikatsu Club made this statement in 1988: "We stand by the belief that housewives can begin to create a society that is harmonious with nature by taking action from the home."

Italy's cooperative movement with five million members is one of the world's largest. It has also developed a distinctive form, the "social cooperative" which either brings together providers and beneficiaries of social services (A type) or else employed workers and unemployed people who are looking for work (B type). These are not cooperatives in the traditional sense, but instead emphasize the 7th Rochdale principle of benefit to the community. The aim is to integrate the "economically weaker layers of society" into the mainstream, among them people with disabilities and former patients of mental hospitals. *Yes!* editor Sarah van Gelder, who visited a number of co-ops of all sorts in northern Italy, described the social cooperatives as "taking the place of government bureaucracies and for-profit businesses, providing services in ways that are compassionate, flexible, and deeply rooted in concern for the well-being of those typically excluded by society." They are based on Christian principles and also connect to the strong cooperative tradition in Italy.

There are an estimated 7,000 such social cooperatives with 267,000 members or about 30 people in each. They are now developing in Portugal, Spain, Sweden, Poland, Czech Republic, Slovakia, Romania, and Bulgaria. According to Bruno Roelants of CECOP, a cooperative umbrella organization, reasons for the growing success of social cooperatives in Europe are the advantages of the cooperative form of enterprise, worker ownership, support by the cooperative movement, and legal and public policy that is supportive and enabling. In the United States, a

group called the Icarus Project is run by and for people diagnosed with mental illness, somewhat resembling the social cooperative model.

Cooperatives have a number of advantages, and may be especially effective in emerging economies. Co-ops help develop local leadership. They are more open to learning best practices from other co-ops. They can afford to look long-range and to experiment because they are not under the same pressure from stockholders to make big gains every quarter. Some critics say that very large cooperatives are hard to tell apart from big corporations. But even these tend to stay much more closely tied to local communities.

The UN declared 2012 to be the International Year of Cooperatives.

Simple Living

> *[Voluntary Simplicity is] living in a way that is outwardly simple and inwardly rich.*
> ~Duane Elgin, *Voluntary Simplicity*, 1981

On the personal scale, the choice to buy less is called simple living or Voluntary Simplicity, a way of life that reduces consumerism. It is consciously practiced by many people in developed nations who realize that simply amassing more and more consumer goods does not make them happy but simply clutters their life. Voluntary simplicity is a conscious effort to resist the persuasions of a consumer society, to recycle and make do like our forebears did even as recently as my own childhood in the Depression or during the rationing of World War II. In the current climate of economic insecurity as well as environmental concern, VS is also becoming chic.

Voluntary simplicity is not just about being thrifty, however. The lifestyle may be motivated by spiritual awareness, a sense of social justice, health both physical and psychological, ecological considerations, and/or personal taste. An added benefit is the security that comes from living within one's income, without going into debt. Leaders and groups of all the major religions, from Buddha to modern-day Amish and Quakers, have chosen and recommended simple, spiritual lifestyles. Henry David Thoreau in his 1854 book *Walden* made a classic case for simplifying one's life, and in India, Mohandas Gandhi lived and taught the concept. +++

Carol Holst of Simple Living America says VS is about discovering what is enough—enough money, 'stuff,' and time—leaving room for the things that matter. Many people like the security and financial independence of living simply, or they want to be able to work fewer hours. VS people are not self-sacrificing. While maintaining a comfortable and healthy lifestyle, they resist advertising and peer pressure, asking: "Do I really need this?" They prefer home-made gifts, home-grown tomatoes, and home cooking. VS families may sharply restrict television watching, especially by their children, among other reasons because television advertising creates and magnifies consumer wants. The Freegans group demonstrates a more radical version of simple living by boycotting capitalist society, the money economy, and consumerism. They barter, practice Dumpster diving, and try not to purchase anything whatsoever.

Local Self-Reliance

> *At some point in the case of most products a time comes when it is cheaper to produce them individually than to buy them factory made.*
> Ralph Borsodi, *Flight from the City, 1933*

In the depths of the Depression, economic theorist and writer Ralph Borsodi published a book that described how he and his family had moved from New York City to live self-reliantly in the country for the previous twelve years. Borsodi put forth arguments for others to do the same thing both for economic reasons and to achieve a better quality of life. *Flight from the City* became a best-seller. Borsodi was also involved with government efforts to promote a back to the land movement, which FDR apparently favored. Borsodi's books inspired perhaps as many as hundreds of thousands of people to become homesteaders during the Great Depression.

Borsodi discovered a very important but neglected economic fact: the costs of distribution absorb more and more of the economies made possible by large-scale factory production. Transporting, warehousing, advertising, salesmanship, wholesaling, and retailing goods cost more than fabricating the goods in the first place. In fact, he says, two-thirds of what the consumer pays is for distribution. This great disadvantage of centralized production was ignored by academic economists, Borsodi said, and it still is. He pioneered a number of concepts, some of which were revived during the second wave of back-to-the-land during the 1970s (in which I participated) and they are being revived again during these economic hard times. He was an apostle of decentralization, believed in voluntary simplicity (which did not yet have that name) created a land trust with Bob Swann, and established a local currency, also with Swann. Borsodi established a School of Living, led for many years by his student Mildred Loomis, which still exists in Pennsylvania.

Local self-reliance can be practiced in the family, neighborhood, and community. One can supply as many needs as possible from local sources, often without cash. In the household, skills such as car repairing and mending mean that family members don't need to pay a garage for minor repair problems, or throw out torn clothes and buy new ones. Ethan Miller says

> Household economies are meeting our needs with our own skills and work: raising children, offering advice or comfort, teaching life skills, cooking, cleaning, building, balancing the checkbook, fixing the car, growing food and medicine, raising animals. Much of this work has been rendered invisible or described as "women's work."

The informal economy already exists and can be expanded. On the neighborhood scale, neighbors make swaps or trade services. Two or three neighbors might jointly own an expensive piece of yard equipment. Neighborhood Watch takes the place of expensive alarm systems.

The Los Angeles Eco-Village is a neighborhood in the Wilshire/Koreatown area that is trying to model a healthy urban community. This two-block, multi-ethnic, working class neighborhood contains about 500 people, small enough to be a face-to-face community where everybody knows everybody (although when the project began in 1993, few neighbors knew each other). The group works on increasing local self-reliance in the areas of "livelihood, food production, energy and water use, affordable housing, transit, recreation, waste reduction, and education." One major aim is to convert housing from rental to affordable cooperative ownership. Some accomplishments of the L.A. Eco-Village by 2004 were the addition of almost a dozen small gardens and over 100 fruit trees, soil regeneration and composting, the purchase of two apartment buildings with a total 48 housing units, the rehabilitation of 35 of these units while training a dozen people in basic rehab skills, and setting up a training center (Institute for Urban Ecovillages) to stimulate and aid the development of other L.A. ecovillages.

Many people prefer to buy from local merchants rather than chain stores. The money then goes round and round the local community. Farmer's markets are another example of community self-reliance. Local produce does not need to be trucked from some state or country 1,000 miles

away, using up petroleum—it also tastes fresher because it *is* fresher. Community-supported agriculture or CSA allows subscribing families to receive the fruit and vegetable harvests of a local, diversified farm. Often they go and pick it themselves, and there are picnic areas for the family to make a relaxing day of it.

The Institute for Local Self-Reliance began in 1974 as the first organization to apply the concept of self-sufficiency to urban rather than rural areas. One focus of ILSR is to develop and protect locally owned retail businesses. Another is energy. ILSR studies found that expenditures for energy went out of the urban community at a much higher rate (85%) than other household expenditures, concluding that energy conservation and decentralized power sources should play key roles in local urban development. ILSR published "Be Your Own Power Company," a how-to book for small-scale power producers. David Morris, Co-Founder and Vice President of ILSR, says that cities unless they are high-density can generate most of their own energy within 50 to 100 miles, but government policies have not been favorable to doing this. Morris says "Their feeling is that large is better than small, absentee is better than locally owned, and it's much better to attract the capital of Wall Street and global investment firms than it is to attract local finance." However, net metering has made it possible for many small-scale power producers to sell their electricity back to the utility company.

In the late 1970s and early 1980s, many cities planned to build garbage incinerators. ILSR supported grassroots groups which fought incinerators for the reasons that they were expensive, polluting, and prevented the possibility of generating jobs through recycling. ILSR studies concluded that a city of one million people could generate 250 jobs if it recycled half of its waste. In addition, the city could generate another 1,500 jobs and add about $250 million to the local economy through two dozen or so manufacturing plants that utilized the recycled materials.

LETS and Time Banks +++

Money is nothing more than an agreement to use something as a medium of exchange. Money is not a thing. It is an agreement.
~Bernard Lietaer, ex-banker and economist

All kinds of communities large and small, whether local, national, international, or virtual, cooperative or competitive, clubs or businesses, may create an agreement to use their own form of money. Barter, of course, is a form of trade that requires no medium of exchange, although people do need to keep track of barters on any but the smallest scale. Jurrjaan Kamp, in an *Ode* article about Lietaer, says that barter now accounts for almost 15% of world trade and is increasing each year by 15%, three times faster than money trade. This includes mutual credit systems as well as direct barters.

On the community scale there are two main types of exchange networks that do not require printed currency. One is the mutual credit system or LETS. Local Exchange Trading Systems were started in 1982 by Michael Linton in British Columbia and have since spread to fifty-three countries. At last count there were 2,600 of them. These LETS develop their own variations and use different names such as Peanuts (Japan) or Ecosimia-Groups (Ecuador). Basically, people in the local community set up a club for trading among themselves, using e-accounts to keep track of exchanges. They may offer any kind of service, skill, or goods as long as it is legal, and usually agree on valuation similar to that of the official monetary system. These are not direct barters, as credits can be used for anything offered by others.

LETS do not replace the national currency—although a few individuals have managed to meet all their basic needs this way—but these mutual credit systems can greatly extend an individual's buying power. In Chiba City, Japan, an estimated 10% of transactions in local retail stores are made through a LETS. In Australia, where these networks have found their greatest popularity, people have built houses using LETS to replace a bank mortgage. Other local systems find their most popular areas of trade are homemade baked goods and homegrown vegetables. Some LETS have a community fund to help support needy members of the community, or for volunteer and activist projects. The UN has set up an interlinking mechanism called UNILETS, and world travelers have used UNILETS units for their accommodations and meals.

Somewhat similar to LETS, the Time Bank idea was developed by American law professor Edgar Cahn in 1986. It has really caught on in Japan and recently the UK, with upwards of 1,000 time banks world-wide. These systems are based on a Time Dollar idea and equality of labor. That is, an hour of an attorney's labor giving legal advice is equal to that of a housecleaner's labor washing the windows. However, some time bank systems do let professionals such as doctors and dentists charge more hours, and although LETS generally follow valuations of the official marketplace, some LETS choose to count members' time as equal in value. UNILETS is a time-trading system. So LETS and time banks seem closely enough related that they actually represent a continuum of pure and hybrid systems.

Just as social cooperatives emphasize social benefits, the time bank appears to be more specifically designed to develop social relationships of mutual aid. According to G. Seyfang, while LETS is the most common form of community trading in the UK, time banks have been more successful in attracting members from socially excluded groups. David Boyle thinks community time banks could play a role in health service delivery, tackling crime, education, and building employability. He notes that time banks and time credits are already an important part of social service and volunteering policies in Japan, especially for elders.

Local Currencies

The pinnacle of power in today's world is the power to issue money. If that power can be democratized and focused in a direction which gives social and ecological concerns top priority, then there may yet be hope for saving the world.
~Thomas H. Greco, Jr., *New Money for Healthy Communities*

Paul Glover, a community activist who founded the Ithaca Hours system during the 1991 recession, spoke in my town about how to set up a community currency. After 20 years, Ithaca Hours is thriving with some 2,000 individuals and 300 businesses in the network. It has even developed a health co-op. Ithaca's money—attractively designed and not likely to be confused with official currency—is backed by hours rather than gold or silver. Ten dollars represents one hour (Ithaca's average wage in 1991) but Glover says people can negotiate over the dollar value of an hour's work: "the hour is flexible, reminding us of equity but not enforcing it." The system will make interest-free loans up to $30,000 and makes grants to community organizations. Glover says that time dollar systems are compatible with computer barter systems and community credit systems such as LETS and time banks.

Ithaca Hours come in several denominations from one-quarter hour to two hours. They are printed on paper made of cattails or hemp using thermal ink and are numbered and signed, making them more difficult to counterfeit than the U.S. dollar. However one problem for local

currency systems is the high printing costs to make money—unless they can include a printer in the network. One UK system, the Lewes Town Pound, turned individually numbered bills into an advantage, using them as raffle tickets for participating merchants. Another necessity for local currency systems, says Glover, is a full-time networker. Without this, some systems have started up but failed. Some 80 U.S. communities have introduced locally printed money since 1991, including Flagstaff Neighborly Notes, Tucson Tokens, REAL Dollars (Lawrence, KS), Berea Bucks, Brooklyn Greenbacks, Equal Dollars (Philadelphia), Madison Hours; also Bow Chinook Hours (Calgary), Toronto Dollars, Tlalocs (Mexico City) and several others.

Belgian economist Bernard Lietaer says that money is not value-free; our current monetary system "promotes competition and short-term thinking; it forces economic growth; and it undervalues care, education and tasks crucial to maintaining a society." Community currencies and other complementary currencies can change that around. Local currencies keep money circulating and people afloat. Despite economic breakdowns, people have skills and goods that other people want and will pay for. Community currencies can give added support to locally owned businesses and help build communities. By encouraging local businesses, they reduce carbon emissions from transportation. They trend toward a steady-state economy.

Local currencies are hardly a new idea. Kamp says that Western Europe's golden age between 1000 and 1300 was based on local currencies which were replaced every five or six years to discourage hoarding and encourage building cathedrals, repairing houses, improving farms and tools, and other productive activity. During the 1930s Depression, many local governments and other entities issued scrip as a medium of exchange in a limited area. Author and attorney Jeff Gates says that the United States had more than 5,000 local currencies during the 1930s Depression. Local currencies were so successful that a bill was proposed to create a national complementary system, but according to Shelley Buonaiuto, who is leading efforts to establish an Ozarks Hours currency in my area, this was opposed by President Franklin Delano Roosevelt because he felt it threatened the central banking system.

Similarly the small Austrian town of Worgl in 1932 introduced a local scrip (as labor certificates) with dramatic results: unemployment was reduced from 30% to virtually none, infrastructure was repaired and constructed, and government revenue rose by a huge factor. Other towns imitated Worgl, but the Austrian central bank forced all the towns to suspend the program to protect its own prereogatives.

Banking Alternatives

I believe that banking institutions are more dangerous to our liberties than standing armies. If the American people ever allow private banks to control the issue of their currency, first by inflation, then by deflation, the banks and corporations that will grow up around [the banks] will deprive the people of all property until their children wake-up homeless on the continent their fathers conquered. The issuing power should be taken from the banks and restored to the people, to whom it properly belongs.
~Thomas Jefferson, 3rd U.S. President, 1743-1826

Most people think government creates money but as Irish economist Richard Douthwaite notes, "Over 95% of the money in circulation in a typical industrialized country is created by banks lending it into existence." For at least 200 years most banks have used fractional-reserve systems, that is, they keep only part of their customer's deposits in reserve and loan out the rest as investments. Thus money is created in the form of debt, and GDP must grow continuously in

order to pay the interest costs on growing amounts of debt. Most nations set up central banks to regulate the minimum amount of reserves and otherwise control the financial situation. They have a fund (such as the FDIC) to insure the deposits of customers in case of a bank failure.

Some economists ranging from the Austrian School to steady-state economist Herman Daly have proposed a return to the full-reserve system but they are very much in the minority. Banks can't make as much money that way. In principle, Islamic banking is a full-reserve system but in practice probably does not achieve this. In any case, several alternatives exist to conventional financial institutions.They include values-based banks, CDFIs, publicly-owned banks, cooperative banks, and banks that are set up to avoid usury.

Values-based banks are conventional banks committed to responsible lending that benefits the environment and people in the local community. An international leader in this field is Triodos Bank in Europe which finances more than 1,000 organic and sustainable food production projects, over 300 renewable energy projects, and fair trade and microfinance institutions in many countries. The Global Alliance for Banking on Values (GABV) lists 18 member banks from Italy to Bolivia to Mongolia to Australia. Some U.S. banks of this nature are One PacificCoast Bank, New Green Bank of Florida, and New Resource Bank of California. A study comparing a group of values-based banks with some of the biggest banks showed the sustainable banks performed significantly better during the years 2007-2010 in returns on equity and assets.

In the United States, over 800 Community Development Financial Institutions (CDFIs) provide community investment into affordable housing, job creation, and other services for lower-income citizens. Chicago's South Shore Bank was the nation's first community development bank. In 1993 President Bill Clinton asked Congress to set up the CDFI Fund fulfilling his campaign promise to establish 100 community development banks modeled on South Shore, devoted to serving neglected neighborhoods.

Public Banks: Ellen Brown, attorney and author, suggests that public banks could give U.S. private banks some needed competition. Many other countries have publicly-owned banks as well as private ones, for instance the Canadian province of Alberta, where Alberta Treasury Branches or ATB have been operating since the 1930s Depression when the Social Credit Party came to power. The government's initial and only investment in the ATB was $200,000 in 1938. Sixty years later, the ATB had contributed $68 million to the government of Alberta.

Brown says that in India 80% of banks are public sector institutions and they have survived the current credit crisis quite well. China also has more publicly-owned banks than private ones. China missed the downturns experienced by other countries that rely heavily on exports for growth. When external markets suffered, China's state-owned banks funded local and state enterprises, creating a fiscal stimulus and jobs. Brown notes that German small and medium-sized businesses have the competitive advantage of ready access to low-cost loans through the publicly-owned Landesbanken (eleven regionally-owned banks).

Public sector banking has a great advantage over private banking because interest is not drawn out of the system but is returned to the public. Brown explains:

> The flaw in the private banking scheme is that banks create the principal portion of their loans but not the interest, which is continually drawn off the top as profit. New borrowers must continually be found to take out new loans to create this extra profit, making private banking effectively a pyramid scheme; and like any pyramid scheme, it has mathematical limits. Today, those limits appear to have been reached.

However, in public banking interest is not drawn out of the system but is returned to the public coffers. "Public banking is thus mathematically sound and sustainable."

One of the candidates for governor of Florida in 2010, economist Farid Khavari, proposed a Bank of the State of Florida that would act as a depository for state funds and open up frozen credit markets as well as making loans at much lower interest rates than private banks offer. Describing home loans in the BSF plan, Brown says: "The state would earn $15,000 per $100,000 of mortgage, at a cost of about $1,700; while the homeowner would save $88,000 in interest and pay for the home 15 years sooner." The BSF could also refinance state and local projects at lower interest rates. Khavari did not win the election, but 18 other states are considering state-owned banks.

An American model of a state-owned bank is the Bank of North Dakota, founded in 1919 by the Non-Partisan League, an organization of farmers who had suffered from a previous credit crisis. Brown says North Dakota is one of only two states not facing budget shortfalls from current hard times and the state has the lowest unemployment rate in the country. Local governments such as cities and counties can also divest their funds from Wall Street and put them into local banks or set up their own banks, capitalized with reserve funds and tax revenues. Brown says that local governments have over $1 trillion in Wall Street banks. That money could stay home to help local communities instead. +++

Cooperative Banking: Cooperative banking institutions include credit unions, mutual savings and loan associations, building societies, and commercial banking services for cooperative businesses. Banks based on cooperative principles are subject to the banking regulations of their nation, and usually charge and give interest like other banks. The big difference is that they are owned and controlled by their customers, who democratically elect the board of directors following the cooperative principle of one person, one vote. The object of credit unions is not to maximize profits but to serve their members, and so these bankers are less likely to take risks. During the 1930s Depression 9,000 U.S. banks failed—but no credit unions.

Unfortunately, several dozen credit unions did fail in the current economic meltdown. Most were small but a few were large corporate credit unions that service smaller credit unions. In March, 2009, two such institutions with over $50 billion in assets were seized and put into receivership, because they were taken in by the widespread fraud in which triple A-rated securities proved almost worthless. Nevertheless, the overall record of credit unions is sterling.

The earliest financial co-ops were started in early 19th century England, and developed into the modern form in Germany mid-19th century. A Quebecois, Alphonse Desjardins, opened the first credit union in North America in 1900. He was trying to protect working people in Quebec who were at the mercy of loan sharks. In 1909 Desjardins set up the first credit union in the United States in Manchester, New Hampshire and other states followed.

To provide more access to credit in the depths of the Depression, U.S. Congress passed the Federal Credit Union Act of 1934 which established the federal credit unions system and set up NCUA to charter and supervise CUs and insure their deposits. The legislation spurred credit union growth and they are now quite common in the United States. According to the Credit Union National Association (CUNA) the United States has 8,147 credit unions with 92.5 million member-owners, almost a third of the population. CUs have assets of $834.4 billion and outstanding loans of $585.2 billion. The (U.S.) Navy Federal Credit Union is the world's largest CU in terms of numbers of members.

Ellen Brown notes that Germany and Japan, 2nd and 3rd place in global exports, have plenty of cooperatively owned banks to provide low-cost funding for businesses. In France, more than

half of banking services are provided by co-ops. The Dutch Rabobank is one of the world's 25 largest financial institutions with several hundred member banks. Larger institutions, often federations of credit unions, are called cooperative banks. The Vice-President of the European Commission, Gunter Verheugen, said in 2007, "Due to their proximity to the local economy, cooperative banks are major players when it comes to financing businesses."

In India cooperative banks date back over 100 years and are an important part of the financial system. Several hundred cooperative banks in about two dozen states and territories finance many farmers and small-scale industries. The state of Kerala alone lists about forty such banks.

Islamic banking, JAK: +++ Another kind of alternative bank lends money but prohibits interest. Usury and attempts to avoid it are as old as money itself. The Old Testament, scripture for Jews, Christians, and Muslims, has quite a lot to say about debts and interest. According to Deuteronomy 15:9, every seventh year is the time to cancel debts. Exodus 22:25 advises: "If you lend money to one of my people among you who is needy, do not be like a moneylender; charge him no interest." At the time of an ancient economic crisis, Nehemiah 5:10 commands: "Let the exacting of usury stop!" Deuteronomy 23:19-20 hedges, saying that it is all right to charge interest on foreigners but not on one's own countrymen.

The Torah (first five books of the Hebrew Scriptures) clearly says God owns all land and wealth, and allows humans to be stewards of it. But they must return it to God every 49 years for redistribution, the Year of Jubilee when all slaves were set free and all debts were cancelled. Rev. Howard Bess, a retired American Baptist minister, says that Jesus felt strongly about the property codes in the book of Leviticus, which were no longer being followed in his era. Rev. Bess suggests that the insistence of Jesus on the overdue Year of Jubilee was in fact the motivation behind his execution.

Modern critics charge that the system of taking interest moves money from the poor to the rich and it favors high-risk ventures that yield high short-term profits.

The Qur'an contains guidelines for a society that treats the poor more fairly and keeps money circulating, in an early free market economy. Today Islamic economics attempts to integrate commerce with Islamic principles derived from the Qur'an, while at the same time adapting to the laws and economic realities in whatever nation Muslims are doing business. Major principles are that interest cannot be earned on loans, profit and loss should be shared, and investing should be socially responsible. Shariah rules outlaw the hoarding of wealth, which modern interpreters say forbids monopolies. It prohibits gambling, insurance, and trading in risk. The Islamic Economics website says, "Islam protects the ownership of businesses and companies by restricting ownership of companies only to those who contribute both capital and effort to the company or business, thus effectively putting the seal on such concepts as 'corporate takeover.'"

Specific practices of Islamic banks include taking equity positions in homes rather than a traditional mortgage, profit-sharing plans, leasing, and repurchase agreements which allow the bank to make money while not charging interest. Some Islamic banking policies are criticized for not really eliminating interest or conforming to Sharia. This charge has also been leveled against, the first microfinance institution, Grameen Bank, which does charge interest. But founder Muhammad Yunus, a Muslim, believes that Grameen micro-lending conforms to the Islamic prohibition of usury because no collateral is required, the interest rate is much lower than that of moneylenders, and borrower-members receive any dividends. Yunus says that micro-finance organizations should not charge more than 15% interest above their long-term operating costs. Some micro-finance organizations such as Kiva make zero-interest loans. Many microfinance

institutions are moving beyond small loans to provide a wider range of banking services to the world's working poor, including savings accounts and insurance.

In Skovde, Sweden, the JAK Members Bank with about 30,000 members is a cooperative bank that charges no interest. Its loans are financed by member savings, and operating costs come from membership and loan fees. Loans are made only to members.

ROSCAs and MFIs: +++ It has been customary in several developing countries from West Africa to Indonesia that an informal group of women in a rural community will meet regularly for six months or so to save and borrow together. A Rotating Savings and Credit Association, or ROSCA, allows each of them to access a larger sum at a specific time for a particular purpose. This "poor man's bank" is a model for many micro-finance techniques such as solidarity lending, village banking, and self-help groups (SHGs).

Most conventional banks will not bother with small loans, especially without collateral, and many assume that poor rural people are not credit-worthy. Seeing a great need for small loans to the very poor, Yunus began the Grameen Bank in 1976, and it now serves more than 7.7 million Bangladeshi families. Almost all loans are to women. The rate of loan repayment is close to 100%. Studies show that Grameen membership significantly reduces poverty and increases household well-being. Other early and successful microfinance organizations are the non-profit FINCA which innovated village banking, and Women's World Banking.

The idea of microfinance developed quickly, with an estimated 7,000 microfinance institutions (MFIs) existing today, serving 100 million clients in 2006. They are needed more than ever as the 3 billion or so people living on less than $2 a day are hardest hit by the current economic crisis. They can't find work in the best of times, have no nest-egg and, in most cases, no government safety-net to fall back on. ACCION International hopes to see microfinance expand to more of the estimated 500 million poor entrepreneurs who could benefit from it.

MFIs vary greatly in size and philosophy, and whether non-profit or for-profit. Many include comprehensive social programs. Others have commercialized the field such as Banco Compartamos which began in 1990 in Mexico and operated as a not-for-profit NGO until 2000 when it reorganized as a for-profit corporation in order to tap commercial funds for faster growth. In 2007 it offered public stock on the Mexican Stock Exchange and investors rushed in. Compartamos IPO grew enormously, but charges about 85% interest on its loans.

Jonathan C. Lewis, CEO of Microcredit Enterprises, asks, "Is microfinance an industry or is it an economic justice movement? Can microfinance serve two masters?" Lewis noted a crucial difference between normal markets and microfinance markets. "In microfinance markets *all* costs are directly borne by poor people….This is not a place for testing classroom economic theories." Yunus says that microcredit organizations should focus on local sources of money, that "connecting microcredit institutions to the international capital market is no solution at all."

Micro-credit is also offered in the United States, where 37 million people live below the poverty line. The Grameen Bank began in New York in 2008 and Accion offers loans to people who are largely minority and who often rely on their microbusiness for at least half of their family income. In 2007, Federal Reserve Chairman Ben Bernanke spoke enthusiastically about Accion USA and especially Accion Texas. With massive unemployment since then, microcredit could well be part of the answer. Not at 85% interest, however.

Worker-owned Business

Labor can and will become its own employer through co-operative association.
~Leland Stanford, 1824-1893, industrialist and founder of Stanford University

At first look, the famous man and his vision seem mismatched. Leland Stanford, one of the four founders of the Central Pacific Railroad, might well be considered a 'Robber Baron' along with other multimillionaire industrialists such as Jay Gould, J.P Morgan, and Andrew Carnegie. Yet after the death of his only son, Stanford devoted himself to promoting the idea of worker cooperatives, a project that if it succeeded would replace the class of wealthy industrialists such as Stanford himself. Historian Lee Altenberg says that Stanford viewed direct worker ownership of industry not as socialism but as the highest form of free enterprise. It was also the vision of the Populist movement, which at its height of power in the 1880s had millions of southern farmers and northern industrial workers as members.

Stanford wrote the idea of worker cooperatives into the founding documents of Stanford University, intending it to be "a leading feature lying at the foundation of the university." In the Grant of Endowment he included the clause that the Trustees "shall have the power, and it shall be their duty…To have taught in the University the right and advantages of association and cooperation." Some praised the plan, and students began the Students Cooperative Association in 1891; but after Stanford died in 1893 there is no evidence that administrators, trustees, or faculty cared to continue his vision, which Altenberg says was largely forgotten within a decade.

Stanford also used his time as a U.S. Senator to promote worker cooperatives. But he was unable to get either of his two major bills passed. The co-op bill would have provided a legal basis for the incorporation of worker cooperatives. The land loan bill would allow farmers to borrow money based on their land value. Many large farmers' cooperatives had failed in the late 1880s because the banking establishment refused to lend them money. Altenberg says "It was the problem of access to capital, and the control of the currency by the banking establishment, that drove the [farmers'] cooperatives into the political arena with the founding of the People's Party" to represent the Populist movement and its dream of a cooperative commonwealth. Stanford's land loan bill was strongly opposed in the Senate. He introduced it three times but it was always killed by the Finance Committee.

Altenberg says that the Populists were the last mass movement in the United States that tried to challenge the growing domination of society by corporations. The labor movement that succeeded the Populist movement in the 1890s accepted the economic structure as given and worked for better contracts within it. Altenberg notes that Leland Stanford's idea to teach working people the principles of worker cooperation is of such a radical nature it is "wholly beyond the current level of debate in the United States, from the right or from the left."

Perhaps it is time to enter this idea into the debate once again. Wikipedia says that there are now more than 400 worker cooperatives in various countries, including some in North America. For instance, Cooperative Home Care Associates in the South Bronx lets members save money toward a stake in the co-op that entitles them to dividends, and also offers affordable health care and other benefits. However, there is still no coherent legislation or Federal law affecting worker cooperatives in the United States. In contrast, Spanish law allows owner-members to hold a self-employed status that supports cooperative working— and the world's largest worker cooperative is in Spain. The Mondragon Cooperative Corporation began in the 1950s. It is now comprised of 140+ companies which employ over 100,000 worker-owners, in an area of Spain (the Basque Country) which once had mass unemployment. +++

Mondragon owes a great deal to Jose Maria Arizmendiarrieta, who came as a young priest to the Basque Country in 1941. The region had a long tradition of cooperative and self-help organizations but it had been devastated by the Spanish Civil War and its aftermath of poverty and repression. Father Arizmendiarrieta saw economic development as a major need. Graduates of the Polytechnic School he set up were the nucleus of the first cooperative business in 1956, followed by a credit union in 1959. Now Mondragon is the economic engine of the region.

About 11,000 U.S. companies, mostly smaller ones, are organized as employee stock ownership plans, in which workers can invest in their companies. Political journalist William Greider sees this as a promising avenue, although it is not the same as owning 100% of the business and helping to run it. The largest industrial union in North America, the Steelworker's Union, has signed an agreement with a large European co-op to help workers in the USA and Canada to get ownership stakes. Melissa Hoover, director of the U.S. Federation of Worker Cooperatives, and Lillian Woo say that much could be done to further co-op businesses. The Small Business Administration could guarantee loans to worker co-ops, Congress could fund an urban co-op development initiative as it currently does for rural co-ops, and state and local governments could give tax breaks and loans to co-op businesses that create new jobs. +++

Basic Income Guarantee

I am now convinced that the simplest approach will prove to be the most effective—the solution to poverty is to abolish it directly by a now widely discussed measure: the guaranteed income.
Martin Luther King, Jr.*, Where Do We Go From Here: Chaos or Community?* 1967

About 40 years ago economists and political leaders became aware of the effects of automation. Technological improvements were replacing human workers. Since then the trend has increased exponentially with widespread use of computers. For example, Ervin Laszlo says that in Germany alone, it would take seven million people to carry out the computations carried on by the automated banking system. Some of these computations could not be made at all without computers. But while we have gained efficiency, we have lost millions of jobs.

People still assume that everyone should work to earn his bread, but French economist Andre Gorz says the micro-chip revolution has changed the work ethic. When it takes only 1,000 working hours per year to create an amount of wealth equal to the amount previously created by working 1,600 hours per year, then people need to obtain a real income equal to current salaries for greatly reduced hours of work.

In the late 1960s and 1970s, politicians such as Richard Nixon and Daniel Patrick Moynihan were proposing a Guaranteed Annual Income (GAI). Noted economists Paul Samuelson, John Kenneth Galbraith, James Tobin, and 1,200 others signed a document asking Congress to introduce a system of income guarantees and supplements guaranteeing that all citizens have an income sufficient to live on. The aim of GAI is to overcome poverty. Such a program typically requires a means test and availability for work or community service, along with a set minimum wage and state pensions for elderly and disabled.

The United States today has a patchwork of such plans: food stamps, unemployment compensation, earned income tax credit for working families with children, Social Security, Medicare, Medicaid, student grants and loans. While this country largely dismantled the AFDC program for poor children and their mothers, European countries often have a mother's

allowance that is provided to all mothers without a means test, as well as subsidized child care and free or affordable health care. In Brazil 5,536 out of 5,581 municipalities have introduced some form of GAI for families.

Basic Income Guarantee (BIG) is a different idea from GAI. BIG is a government ensured guarantee based solely on citizenship (or permanent residency) that no one's income will fall below subsistence level. BIG is unconditional: it is not means tested and has no work requirements. Two hundred years ago, Thomas Paine advocated something like BIG to compensate for the citizen's "loss of his or her natural inheritance, by the introduction of the system of landed property." In mid-19th century Joseph Charlier—a follower of the utopian socialist Charles Fourier—argued for a "territorial dividend" which each citizen deserved by equal ownership of the nation's land and resources. Classical economist John Stuart Mill rephrased his *Principles of Political Economy* to clarify his support for such a system:

> In the distribution, a certain minimum is first assigned for the subsistence of every member of the community, whether capable or not of labor. The remainder of the produce is shared in certain proportions, to be determined beforehand, among the three elements, Labour, Capital, and Talent.

The Social Credit monetary theories of Major Clifford Hugh Douglas (1879-1952) had quite a bit of influence in Australia, UK, and especially in Canadian politics during the 1930s and beyond. Economic productivity increases every year and Douglas says the decision about who gets the additional money is determined by monetary and banking policy. Under the current fractional reserve system, banks get it. In a Social Credit system, the extra dollars resulting from technological innovations are considered a "cultural heritage," divided up and given to all citizens as a dividend. However the complete ideology of Major Douglas included conservative Christian values and other elements that complicated support for his proposed monetary policies.

In 1967 Nobel economist James Tobin published an article about how a BIG system could work and persuaded George McGovern to include the plan in his 1972 presidential campaign. At the time it was called a negative income tax. Today academics and activists developing the idea have formed a network to discuss BIG and related ideas, the Basic Income Earth Network or BIEN.

One obstacle to popular understanding of BIG is that it has so many names and variations. A number of related programs have been proposed such as: Basic Income, Citizen Dividends, Citizen's Wage, National Minimum, Negative Income Tax, Social Credit, Universal Benefit, and others. The Alaska Permanent Fund is the only such plan actually in effect and it is only a partial income guarantee, giving every Alaska resident a dividend based on income from the state's oil resources. A BIG pilot program is underway in a village in Namibia. In only one year it greatly reduced the number of malnourished children and sent them to school, while their parents are setting up their own businesses.

The Basic Income Guarantee could be seen as a strong safety net without any holes in it. Some conservatives oppose safety nets on principle, saying they cause a population to become weak and degenerate. Yet these critics do not show similar concern about individuals who are 'born with a silver spoon in their mouth,' those who have always had good diets and medical care, attended expensive private schools and the finest universities of the land, and who anticipate inheritances and lifelong security. Conservatives rarely criticize the governing elite for having lacked struggle in their lives. Another conservative worry is that with BIG, we would all go fishing and surfing. However, most people would not be satisfied with a subsistence income

and would start a small business or look for full or part-time paid employment. It would certainly be a worker's market, without sweatshops.

With BIG, mothers would finally have a real choice to stay at home with their young children if they wish, or to work part-time. A Pew Research survey in 2007 found that in the United States, 49% of moms who work full-time outside the home would prefer to work part-time. Meanwhile, one-third of stay-at-home mothers would prefer to work part-time if they had the opportunity and support system. Another advantage of BIG is that many creative people—artists, musicians, writers, inventors—would welcome the opportunity to pursue their vocations without constant money pressures. This freedom could create a flowering of culture. Some individuals would start their own small businesses. It is likely that many individuals would grow their own food and textiles, becoming more self-reliant as Ralph Borsodi urged, leading to something like Thomas Jefferson's vision of a nation of independent yeomen farmers.

How would a basic income be funded? Many alternative proposals include land and natural resource taxes, collective resource ownership, universal stock ownership, a National Mutual Fund, Tobin Tax, and others. Philippe Van Parijs, Belgian economics professor, notes that by multiplying the poverty threshold for one person times the nation's population, "one soon reaches scary amounts—often well in excess of the current level of total government expenditure." But Parijs says this is misleading because many existing benefits can be ended or reduced once a UBI [universal basic income] is operating. According to scholars Karl Widerquist of Oxford University and Michael A. Lewis of SUNY, the basic income guarantee would replace most of the tax and benefit system with a simple equation.

Van Parijs, speaking to a BIEN conference, asks the question, "Does it make sense to think of spreading the basic income project beyond those relatively affluent countries with a relatively developed welfare state in which it first took root?" Traveling to countries in Africa and Latin America, Van Parijs noted the great difficulties involved with setting up this project in a country such as the Congo. Yet South Africa has a powerful basic income movement, and elements of basic income are already in place in the 'granny's pension.' In Medellin, Colombia, one of the world's most dangerous cities, BIG is an important idea as a radical third way between neo-liberalism and "millenarian socialism."

To address the paradox that so many of our species live in great poverty that coexists with over-consumption and pollution in other parts of the world, some thinkers have applied the basic income concept on the global scale. The third and fourth versions of this idea are the Global Basic Income (GBI) and the Earth Dividend. Both are *income that is given unconditionally to all peoples in all countries*. The GBI is funded through taxes or premiums, such as the plan presented by social scientist Gianluca Busilacchi which would finance basic income by taxing the production of waste and pollution, while the Earth Dividend plan is based on the concept of common ownership of the Earth.

According to Rene Heeskens, director of the GBI Foundation, in the Earth Dividend model "All people will receive shares of global commons as equal shareholders of the earth. The value of these shares is determined by the market." Everyone would get certificates to represent their share of nature's resources, so companies that need those resources for production must buy the certificates from individuals just as they now have to buy the right to use a natural resource from many governments. The plan is consistent with free market philosophy and in fact is similar to the Alaska Permanent Fund. For almost 30 years all permanent residents of Alaska have received a yearly dividend from petroleum sales, although not large enough to provide a basic income.

Both the GBI and Earth Dividend versions contain the dual purpose of ending poverty and protecting the environment by conserving resources and taxing pollution. There are some similarities to the personal carbon trading plan described earlier. A number of international scholars and others have dedicated themselves to working out the complexities of such plans, and one hopes their efforts can result in consensus support for a few alternative plans that could be presented to the world public in the near future. The Zeitgeist film and movement have presented a somewhat oversimplified version of this idea. We are about 40 years overdue for a public discussion of all these related plans.

Buddhist Economics

Only a people serving an apprenticeship to nature can be trusted with machines.
~Herbert Read, British philosopher

E. F. Schumacher's study of Buddhism led him to the realization that economic systems have a spiritual or species-evolving dimension. Buddhist economics has a very different view of labor than we are used to in the West. It is based on beliefs that good work or 'right livelihood' is essential for human beings and that local production, from local resources, for local needs is the most rational way to conduct economic life. E.F. Schumacher (1911-1977) developed the principles while he served as an economic consultant in Burma, contrasting them with modern economic theory in the West. The modern economist, he says, measures the standard of living by the amount of annual consumption, assuming that a person who consumes more is better off than a person who consumes less. A Buddhist economist would find this quite irrational: "Since consumption is merely a means to human well-being, the aim should be to obtain the maximum of well-being with the minimum of consumption." Schumacher's ideas informed the development of various indexes to measure Gross National Happiness.

Schumacher says our present economic system has a distorted idea of work. From the employer's viewpoint work is simply an item of cost which should be reduced to the minimum or eliminated by automation. From the employee's point of view, work is a sacrifice of one's leisure and self-development, with wages a compensation for the sacrifice. From a Buddhist viewpoint, however, this kind of thinking makes goods more important than people and consumption more important than creative activities. A Buddhist approach would shift emphasis back to the worker rather than the product of his work. Ideally, work should serve at least three functions: to give a person the opportunity to use and develop her or his abilities; to enable the person to join with others in a common task; and to produce the goods and services we need for a "becoming existence," lives that are comfortable but not cluttered with consumer goods. He says

> To organize work in such a manner that it becomes meaningless, boring, stultifying, or nerve-racking for the worker would be little short of criminal; it would indicate a greater concern with goods than with people, an evil lack of compassion and a soul-destroying degree of attachment to the most primitive side of this worldly existence.

William Greider says that everyone who works, in office, store, or factory, should be able to "own their work" in other words "to exercise personal responsibility for what they do and enjoy mutual respect and the capacity to contribute and collaborate in important decision-making within the firm." He says these democratic qualities are mostly missing from U.S. workplaces.

Schumacher also believed that economic development and technological progress should proceed on a scale that is appropriate to each particular environment, culture, and economy. This idea has come to be called 'appropriate technology' or A-T. For instance, Schumacher would have strongly opposed huge dams that displace hundreds of thousands of peasants and remove good agricultural land in order to provide electricity for city-dwellers. According to John Perkins, author and former "economic hitman," the World Bank has promoted many such projects to benefit the American companies that build them, while leaving Third World countries deeply in debt. Clearly these mammoth projects are not on an appropriate scale.

Instead, Schumacher would establish development districts in a larger country so that vast industrial build-up becomes unnecessary and impractical. The country's material needs can be satisfied regionally by using less expensive and simpler equipment. While Schumacher recognized that this intermediate technology would reduce productivity compared to costly, automated machinery, it would also employ more of the population. Schumacher would define unemployment as the saving of manpower by the inappropriate use of high technology, and predicted that technological unemployment will inevitably lead to social revolt.

Appropriate technology is smaller-scale and decentralized. It tends to be more reliable, so breakdowns do not disrupt so many people's lives. Although simple, easy-to-use and easily repaired locally, A-T is not based on going back to previous centuries but rather on modern, technologically sophisticated designs. Appropriate technology emphasizes renewable resources such as solar and wind-generated energy and systems that conserve resources by recycling. Thus A-T can satisfy basic human needs and at the same time minimize damage to the environment.

An example of A-T is the Aquaduct, a three-wheeled cycle that filters dirty water into potable water as the cyclist rides. It was developed by a team of six young engineers in Palo Alto, using easily obtained parts. Others are the pot-in-pot refrigerator invented by Nigerian teacher Mohammed Bah Abba to keep produce and other food cool without electricity, treadle pumps, and the grain hammer mill greatly improved by M.I.T. student Amy Smith.

One plan provides poor villagers in India with bio-gas digesters that can turn cattle manure into methane to fuel cookstoves. This brings several benefits at once, for people and planet. Women no longer have to spend long hours searching for firewood. The time and energy saved can be used instead for productive work that raises the household income. Methane is burned that would otherwise enter the atmosphere as a potent greenhouse gas. And the stoves burn cleaner than wood, protecting the health of household members, especially children, from soot that causes asthma and other breathing problems.

A remarkable program exists in India for teaching women from villages in Fiji, Rwanda, Peru, and other countries how to construct solar devices to power their own villages. The Barefoot College has so far trained about 250 illiterate and semiliterate rural women from 41 countries to be, in effect, solar engineers. Women speaking different languages, different from the Hindi of their teachers, women who have never before left their villages, learn how to solder together a circuit board and how to set up their neighbors with solar electricity. The training takes six months and is paid for by the Indian government, including airfare. Barefoot College also trains rural Indian women—15,000 so far—to become teachers, construction workers, dentists, water testers, and others who can bring basic services to their villages.

The founder of Barefoot College in 1972 is Sanjit Roy who says in an online video "Listen to the people on the ground. They have all the solutions in the world." +++

Chapter 11
Population and Poverty

Human population reached its first billion by about 1810, its second billion by 1930, third billion by 1960, fourth billion by 1974, fifth billion by 1986, sixth billion by 2000—and seventh billion about October 31, 2011.

The population issue has two parts. The part that gets most of the attention is sheer numbers. Like other biological creatures, human beings who live in a given place cannot increase their numbers beyond certain limits without an ecological and population collapse. The number beyond which there are bad consequences is the region's *carrying capacity*. The carrying capacity depends on things like soil, water sources, and availability of food,

Historically, when human populations outrun local resources this often leads to deforestation which in turn changes local climate, soil fertility, and water table. Agriculture declines. Poverty grows. Eventually the entire culture disappears. Many deserts or barren lands of today were once fertile land or forests. Sometimes they were overgrazed by sheep or goats. Or, depending heavily on fish or game, a society overfished or overhunted its local territory in order to feed too many hungry mouths. Jared Diamond in *Collapse: How Societies Choose to Fail or Succeed* describes a great many such ecological collapses across the world, historical and recent.

In other scenarios, a burgeoning population puts too much stress on its own resources, then turns toward somebody else's territory and colonizes it or start a war of conquest. One population gains resources at the expense of another. Current globalization is an economic form of colonialism, with industrially less developed and poorer nations growing food and mining ores for the rich ones.

People in poorer nations might be able to grow enough food for their own needs if they weren't growing cash crops. Now they're dependent on the vagaries of the world market. Sometimes modern, Western methods of agriculture are unsuited to the region. But, from the rich country's point of view, the poor nation simply appears to have too many people.

So far we've referred to overpopulation of specific regions, in terms of local sustainability. Terms changed at the turn of the 18th to 19th century when Quesnay and Turgot (early French economists) and English economist Thomas Malthus predicted that on the *world scale*, humans would inevitably outrun agricultural land and other resources. Malthus famously pointed out that human population increases geometrically while food production, at best, increases arithmetically. His answer to this problem was prevention: checks such as birth control, but especially, "moral restraint" or postponement of marriage and abstinence until marriage.

Malthus is still controversial, but there is no denying the links between high population growth and poverty. Currently, 99% of total population growth occurs in countries where one out of five people is malnourished. The Population Institute says that except for a few oil-rich states, as yet no country has risen from poverty while also maintaining a high rate of fertility. Almost all of the predicted population growth will take place in less developed regions, where 5.3 billion people are expected to increase to 7.8 billion in 2050. In contrast, the population of the more developed regions will remain mostly unchanged, at 1.2 billion. One might note that the poorer countries which are growing in population are usually former colonies and spheres of influence of the countries that are now stable or shrinking in population.

The Golden Billion: The 20th century saw a great increase in the proportion of the world's poor relative to its rich, yet proponents of globalization assert that more capitalism and international trade is the answer (the hair of the dog argument). For example, in *Hot, Flat, and Crowded*, Friedman quotes Chevron CEO David O'Reilly about population challenges ahead. At the time—only a decade ago—there were six billion people in the world. O'Reilly said that one billion people, the so-called 'golden billion,' have a standard of life roughly equivalent to that of Americans, while two billion others are on their way towards achieving this same living standard. Meanwhile three billion or roughly half of us were mired in poverty. Another three billion people were expected by 2050, as world population grows to nine billion, with the newcomers in the poorest countries. These figures suggest that by mid-century, at least two-thirds of us may live in poverty:

The golden billion *   Industrializing * *   Current poor * * *   Poor to come * * *

The poor would rise from half of us to two-thirds of us. Yet O'Reilly, like most leaders in the wealthy world, promotes free market trade as the solution. He assumes it is possible to bring eight billion more people up to the current standard of living of the golden billion, and that capitalism on the U.S. model can solve world problems. However, making the world in the American image is not only unlikely to happen but it would also not be sustainable, because the current American standard of living itself is not sustainable. Since the five percent of the world who live in the USA consume 20% of the world's energy and other resources, that means that if everybody on the globe lived the American lifestyle, we would need four more planet Earths.

Does that mean that Americans and citizens of other wealthy nations should say "Sorry, it's too late for you!" to the rest of the world? Are we in the wealthy west allowed to have an unsustainable lifestyle because we got there first and colonized the other countries? We need a fairer solution than that.

It's Already Happening!

It must rank among the most remarkable events in recent human history. In just 60 years, the global average number of children each woman bears has fallen from 6 to 2.5.
~George Monbiot, blog October 27, 2011

The most recent UN predictions are that world population will reach 9 billion around 2050, which assumes a decreasing average fertility rate down to about 2.0 or replacement reproduction. *This decrease is already underway.* Despite public concerns about growing populations—with some people seeing this as the biggest threat to the planet—worldwide fertility rates are already dropping dramatically. According to a recent *National Geographic* article

Close to half the world's population lives in countries where the fertility rates have actually fallen to below replacement rate, the level at which a couple have only enough children to replace themselves—just over two children per family. They've dropped rapidly in most of the rest of the world as well, with the notable exception of sub-Saharan Africa.

Let us grant the necessity to limit the world's population growth as much as possible—and to do so humanely, and democratically—perhaps *ultimately* reducing humanity to a more

sustainable size of four or five billion by a century or two hence. This change appears to be occurring on its own, as a result of women's choices, urbanization, and other reasons.

Population the Second Part: Swiss sustainability advocate Mathis Wackernagel, co-creator of the Ecological Footprint concept, says that human beings surpassed the regenerative capacity of Earth around 1980. At that time world population was about 4.5 billion and carbon emissions were 16 billion metric tons. In 2010 carbon emissions were nearly twice as high, at 30.6 metric tons. Almost half of the planet's original forest has been destroyed, and most of this loss occurred from 1980 to 2010. Biodiversity declined in tandem.

The second part of the population issue has to do with over-consumption and depleting the Earth's systems faster than they can recover. It applies to the rich countries more than to the poor ones. While this issue is equally or more important than sheer numbers, it is often ignored by those who concern themselves about 'the population problem'. This second imperative is for people in wealthy countries, who generally over-consume or waste more than their fair share of the Earth's bounty, to drastically reduce their ecological footprint.

This requires a big rethink about both our economic systems and our lifestyles. For instance, the Agrimonde1 report by two French organizations suggests two possible scenarios to feed all nine billion people currently predicted to be alive in 2050. One scenario would emphasize economic growth over environmental concerns and would require an 80% increase in agricultural production. Such an increase seems unlikely, since soil and water are not only finite but have been declining—even without climate change. The second Agrimonde scenario, which takes global ecology into account, would require a more feasible 30% increase in food production but also a cutback in overall food consumption in developed countries. This would undoubtedly include a widespread change to a more vegetarian diet.

But many who worry about overpopulation don't want to change themselves, to consume less or change their lifestyles. They don't speak from species consciousness but would rather blame poorer people of other countries and continents which have higher birth rates. Citizens of rich countries need to look to the mote in their own eye. Much of the rhetoric about "too many people" veils Social Darwinism, racism, misanthropy, misogyny, and economic colonialism.

People in wealthier countries and especially the USA can reduce their ecological footprint in numerous ways. Individually they may commit themselves to simpler lifestyles. As citizen voters, they can work towards a future that does not depend on constant growth and fossil fuels—toward a steady-state economy. They can redirect international economic institutions toward more equitable distribution of wealth, respect for local folkways and wisdom, and regional self-support.

Instead of a 'one size fits all' globalization imposed by secretive trade organizations representing rich countries, international leaders would encourage people in developing countries to become more economically self-sufficient, growing most crops for themselves rather than for export. World financial organizations would support appropriate technologies that actually make most people's lives better and help them survive—rather than grandiose technological projects that bring electricity to some while destroying cropland, wildlife habitat, and the livelihood and homes of thousands of others. Huge dams often benefit a U.S. corporation that gets the contract while putting the entire population into long-term debt and increased poverty.

Zero Population Growth

A good first step would be universal access to birth control and a firm resolution to raise the entire human race out of poverty.
        ~Bryan Welch, publisher of *Utne Reader, Mother Earth News,* and *Natural Home*

It seems that much of humanity is already unconsciously adopting the ideal and ethic of zero population growth **(ZPG),** voluntarily limiting family size by contraception to 'replacement reproduction.' This would prevent the world's population from rising to the nine or ten billion now predicted which would directly result in the deaths of millions or billions of the poorest, while accelerating climate change and other ecosystem failures. ZPG is an ideal and an ethic, not mandated by governments. +++

Some insist on NPG (negative population growth) as an ideal, saying we need a 'one-child policy' as pursued by China for decades and that our ultimate aim should be a world population of three billion or even less. *However, this author emphatically rejects any coercive or discriminatory methods of accomplishing either ZPG or NPG, methods such as forced sterilizations, forced abortions, or requiring licenses to have children.* Let us also discard the 'lifeboat' or 'international triage' meme that suggests we in the wealthier countries should abandon people in poor nations during famines, natural disasters, and genocides. While such abandonment might *temporarily* reduce world population growth, it is totally unacceptable to any system of morality. And the context always includes past exploitation of the poorer nations by wealthier nations.

Another reason to reject this triage idea—popular a few decades ago—is that it would not achieve the intended aim of reducing population for very long. Historically, countless plagues, wars and disasters have not kept humans from expanding their numbers. During the 18th century, smallpox alone killed an estimated 400,000 Europeans every year, including five reigning monarchs. Until its official eradication in 1979, smallpox killed an estimated 300 million during the 20th century, perhaps as many as half a billion. Yet our numbers grew.

Instead of force, we could make information and access to contraception readily available to everybody on the planet at a price the poorest can afford. As a political matter the United States is once again embracing family planning across the globe, even where in a few cases the same institution not only dispenses contraceptives but also performs voluntary sterilizations and abortions. In the United States itself nearly half of all pregnancies are unintended, according to 2001 figures from then Surgeon General David Satcher. In funding medical research, a high priority belongs to devising new and better forms of contraception. Expensive devices, chemicals that unbalance the female endocrine system, surgical methods, or condoms that many men refuse to wear are still not quite good enough.

Many developing nations have had family planning for 50 or 60 years. De Villiers notes that Sri Lanka and Afghanistan had the same population in 1950, but Sri Lanka set up clinics and by 2050 will have only one-fourth of Afghanistan's population. In another example, Bangladesh had five million more people than Pakistan in 1970, but developed a culturally acceptable family planning program while Pakistan didn't. "As a result, by 2050 Pakistan will have 62 million more people than Bangladesh." These are dramatic reminders of the geometric growth of population, as well as of the importance of human choice and leadership policies.

Iran's remarkably rapid drop in population growth—from an average seven conceptions per woman to less than three, over a span of only 15 years— is due mainly to family planning

programs that involve men, integration of family planning and primary health care, and increased literacy rates. One of the proven ways to reduce rates of population growth is to educate women and open up opportunities for them such as are provided by micro-loans, described elsewhere.

Brazil is another example of a rapid turnaround in less than two generations, from an average 6.3 children per woman in 1960, to 1.9 in 2009. This change was driven by women's choices, urbanization, and economic changes despite religious and governmental opposition. Cynthia Gorney notes that "the nation was profoundly altered by the *moviemento das mulheres*, the women's movement of the 1970s and '80s." Some of the causes and methods of this change have not been so positive as models—Gorney cites rapid industrialization, high rates of cesarean births that often include a discreet tubal ligation, and rapid introduction of electricity and television, with the latter playing telenovelas with "a singular, vivid, aspirational image of the modern Brazilian family: affluent, light-skinned and *small*."

Other reasons for Brazil's reduced population growth are more positive models: improvement of infant and child mortality and a national pension program. One priority for action comes from the fact that many people in poor countries count on their children to take care of them in their old age, which motivates them to have more children. Jean Jacques Cousteau insisted that assuring a small pension for people's later years is fundamental for slowing population growth. Cousteau estimated at the time that the cost of digging wells for those who lack clean water, educating women, and assuring old-age pensions for all humans who presently lack them would together equal about one-third of annual global military expenditures.

Controversies about Population

The biggest obstacle was mixing abortion with overpopulation. These are two things that have nothing to do with each other.
~Jacques Yves Cousteau, marine scientist and explorer, 1910-1997

Many debates are fueled by those who ignore the second side to population growth, who view population issues entirely in terms of numbers and see the problem as too many births in poor nations. They are likely driven by Social Darwinist notions and in denial about their responsibility to radically downscale their own consumption. If your own ecological footprint is 20 times greater than that of a Bangladeshi, do stop railing about those over-fertile brown women someplace else. You could help make sure they have access to safe and affordable contraception.

One notion that appears among the more paranoid members of the body politic is that when people talk about reducing future population, they really mean widespread genocide. Various conspiracy theories circulate about this, often directed against the UN. An Internet list of purported quotes from various world leaders and environmentalists includes several that advocate reducing world population to half a billion or less. Such low figures do not relate to any expert estimates of Earth's carrying capacity even at North American living standards, and the quotes are hard to track down to any credible source.

It is of course *possible* that some secretive, Social Darwinist elite, for its own ideological or geostrategic reasons, plans extreme, rapid population reduction or genocide. So far I've not seen convincing evidence of any such conspiracy. People who are talking about long-term reduction of birth rates should use very clear language to avoid misinterpretation.

The other side of this coin reveals those who do favor coercive methods or who would require people to get a government license to have a child. There are better ways to reach more

sustainable numbers than force and government control. Also, some individuals and groups overstate their concern for the extinction of unique species and ecosystems by professing hatred of their own species. There is a group known as the Voluntary Human Extinction Movement that seriously or not, promotes the idea that the planet would be better off without *any* humans, and for this reason encourages people to voluntarily refrain from procreating.

People who promote constant growth may consider population solely in terms of available food, saying that if food were distributed equitably to everyone, there would be more than enough for all. (We are a very long way from distributing food or any other resources equitably to everyone, so that is a moot point.) Or, that the only countries suffering from famine are those with horrible, irresponsible governments engaged in wars or civil wars. Even when partly true, such statements do not counter concerns about overpopulation. First, the arguments only look at today's populations, not tomorrow's.

Second, regions with degraded soil or dwindling water supplies cannot support large populations indefinitely with food from outside their region. Outside aid may not always be forthcoming. We need to look at agricultural systems, not just food. But in November, 2009 a global meeting of nations rejected the UN's request to commit $44 billion annually for agricultural development in poor nations and also omitted a pledge to eradicate hunger by 2025.

Third, besides food, people need water and other necessities such as firewood, non-food crops for fibers and building supplies, and the mineral resources required to support even a basic technology. Water scarcity is already threatening many regions. Fourth, this food argument ignores the second half of the population problem, the ecological footprint. More of us could subsist on the Earth if we all lived like Chinese or Indian peasants. But it is much more likely that more of us will live here at a higher standard of living, using up resources faster and polluting more.

Fifth, by expanding human populations to their greatest capacity, we would crowd out most of the other species, with unknown results for ourselves—aside from the moral question of our right to destroy so many fellow creatures and green life.

One absurd argument appears even in syndicated newspaper columns. It goes: "I was flying over America and amazed by all the wide open spaces without any sign of human habitation. So, there is no overpopulation!" Obviously, the Rockies are not densely inhabited because mountainous and desert regions cannot sustain large populations. The United States is not the most densely populated country anyway. And problems associated with depleted soil, local pollution, or inadequate water supplies are not evident from a flyover.

Some point out the high population density in countries such as Netherlands, Belgium, and Japan without noting that these countries are not self-reliant—that they import many necessities.

A few people support constant population growth saying that if more children are born, there will be more great minds available to solve human problems. However, seven billion is plenty—we are already losing many potential geniuses in childhood to poverty, pollution, and war. Some say that since humans are part of nature, anything we do is natural and justified. But one should look at a typical day to determine how much of one's life is 'natural.'

Two powerful kinds of ideology oppose limiting population growth: religion and nationalism. To accomplish ZPG may well require the Catholic Church, with over one billion followers, to modify its teachings regarding contraception. The Catholic hierarchy—although not most of the laity or priests—steadfastly opposes any methods besides rhythm planning and *coitus interruptus,'* neither of which has a high rate of success. According to Catholic theologian Keith Soko, in the mid-60s Pope Paul VI formed a committee to study the stand against contraception.

Seventy out of 90 committee members recommended that the Church allow contraception for married couples, but the pope rejected this conclusion in his 1968 encyclical *Humanae Vitae*, and subsequent popes continued to support the ban. Soko says that most Catholic theologians (professors of theology in U.S. Catholic colleges and universities) reject teaching on this issue.

In the industrialized nations, many otherwise devout Catholics have long ignored Church bans on contraception—for instance 87% of married Catholic women in Spain, 70% in Poland, and 90% in France and Colombia use birth control. Surveys show that in the United States, 98% of Catholic women have used contraceptives at some time in their life. However, in some poorer nations these teachings contribute to unsustainable population growth. In a creative breakthrough, the Vatican could fund rapid development of a truly effective, natural contraceptive method that does not require so much conscious monitoring or self-control.

Many Protestant fundamentalists in the United States also deny the possibility of overpopulation, and some of them oppose contraception. Protestant fundamentalism defined itself in opposition to modern biblical scholarship and the theory of evolution, and oppositional attitudes continue to arise from this group. Religious fundamentalists contribute to a pattern of denials and blanket opposition regarding global warming and other environmental issues.

If fundamentalists assume that concern about overpopulation will lead to more abortions, this is not necessarily the case. The two issues can be separated, and in fact higher rates of contraception usually accompany lower rates of abortion. Constant dialogue can address those of various religions who oppose contraception because they want to control women or because they have negative beliefs about human sexuality.

Nationalism is the second major barrier to sane population policies. Reproductive rates in some developed countries are not sufficient to replace their populations, so some leaders consider paying women to have more babies—for the supposed good of the nation! Meanwhile, of course, other countries are mired in poverty in large part because people have no way to limit births. Recently, a conservative American columnist described Iran as a country on the skids because the Iranian birth rate has fallen below replacement, like that of Italy. Yet the Earth Institute says that in this respect, Iran is a model for other countries. A stabilized population can signify demographic maturity and rising standard of living. We need to encourage a planetary, not a nationalistic approach to population growth.

One common argument against lowering birth rates in the United States and other industrialized nations is the need for new workers to pay into old age pension funds to support those who retire. (One does not hear similar dire warnings because there are too many billionaires and not enough workers to support them.) The argument ignores the increasing productivity of workers because of automation—or the consequent loss of jobs. It ignores how local jobs lost to outsourcing raise local unemployment rates. The argument also ignores the savings to society from schools not built and teachers not hired when fewer children are born.

This not-enough-workers argument treats each nation as an island and fails to consider the world's current high rate of unemployment or the fact that in many less-industrialized countries half the current population is below working age. In poorer countries, there are at least 340 candidates for every 100 jobs, according to a UN report. Harm De Blij says that internationally coordinated migration could serve as the planet's safety valve, but rich countries put up legal barriers to prevent most of this from happening.

There are alternative ways to deal with the problems of an ageing population. In Japan almost 20% of the population is over 65. Instead of relying solely on social security, the Japanese have a

complementary currency, the *fureai kippu* or 'caring relation notes.' People can earn credits by helping elderly neighbors with housework or errands, then use the credits for their own parents or save them until they need help themselves.

More attention to world health and less to profit-making would ensure that older people remain healthy and productive for most of their days as in those countries and communities that are models of longevity. While I do not advocate an ever-higher retirement age, there are many needed tasks in the informal economy, and elders often contribute not-for-profit generativity.

A Well Baby Movement: A world-wide, Well Baby Movement could include a broad range of people, bringing together parents, environmentalists, those who oppose abortion, and those who simply care about human welfare. The aims of the Well Baby Movement would be to assure the best possible start for every baby born on Earth, while encouraging a lower birth-rate in both developed and developing countries (by positive, never coercive means). It could build on the bond that mothers (and parents) show towards other mothers and parents everywhere and make this kinship a conscious thing. Surprisingly, there seems to be no special word for this kind of solidarity, call it maternality or parenthood or what you will. Some immediate goals of this movement are:

To give social support to pregnant women, mothers, and families everywhere.

To educate women and empower them economically so that, among other benefits, they can control the size of their families.

To support safe childbirth.

To promote child health and welfare across the world and support clinics providing free or low-cost prenatal and early childhood medical care.

To give direct assistance with malnutrition, vitamin deficiencies, diarrhea, malaria, and other preventable diseases in children and pregnant women.

To reduce the number of abortions by continually improving contraceptive methods and providing access to contraception.

To further economic justice and equity, sustainable practices, and local economies.

To counter the arguments of those who promote a high birth rate for nationalistic, economic, or religious reasons.

Of course various agencies of the UN, governments, charities and other NGOs currently perform many of the services listed above. What I propose here is a broad-based movement of people who recognize how important it is to humanity that *all* people have only the number of children that they want and can care for, at the right time for them; and that all children receive what they need to stay healthy. This is a species issue if there ever was one. Let's see no more babies with broomstick legs and swollen bellies, anywhere, ever.

Worldwide rates of maternal mortality and infant mortality are far too high. By UN estimates, 529,000 women died in the course of bearing children in 2000, virtually all of them in developing countries such as those in sub-Saharan Africa. Compare this to 378,000 violent war deaths estimated to have occurred in the world each year from 1985-94. More women die in childbirth than in wars. Most of the maternal deaths could have been prevented by modern care.

Meanwhile, in more prosperous countries birth is over-medicalized. Women giving birth at most U.S. hospitals will deal with up to 17 different drugs, tubes and attachments, unless they

have a cesarean delivery, which involves a different set of high tech. Yet the USA is near the bottom of the industrialized world in terms of neonatal (newborn) mortality (34th in the world).

WHO guidelines say that cesarean sections should comprise between 10 and 15% of all deliveries, but many nations, including the United States, have two to three times that number. When a country's cesarean rate rises over 15%, the dangers of the surgery start to outweigh its benefits: a woman's likelihood of dying from childbirth is five to seven times greater from a cesarean delivery than a vaginal one, and twice as many women require a second hospital visit after a C-section. In Brazil more than half of all births are by C-section and it is 82% if the woman has private health insurance. Brazil's neonatal mortality is listed at 107th among nations. Recently women have organized marches in many Brazilian cities to defend their right to choose the form of childbirth and to protest the medicalization of even non-caesarean deliveries. +++

One way to promote child health is to support breastfeeding, which medical authorities strongly recommend for the first six months of infancy. There are significant health benefits for both mother and child. A major obstacle in less developed nations is the aggressive advertising of companies that manufacture infant formula. In the United States an important barrier to breastfeeding is the lack of paid family leave. According to the MomsRising organization, most mothers of infants are in the labor force yet 51% of them have no paid leave of any sort. This situation makes breastfeeding difficult and only about four in ten new mothers are breastfeeding at six months. MomsRising notes that paid family leave also lowers infant mortality, combats poverty, and reduces the wage gap between women and men. As of 2008, Australia and the United States were the only OECD countries without a national paid maternal or parental leave. Many much poorer nations offer this benefit, and so could we. +++

Throughout history and even before, families and individuals by limiting births kept population numbers from exceeding the carrying capacity of their locality. Their methods— mostly benign but some not—included prolonged lactation, celibacy, periodic abstinence, premature withdrawal, late marriage, contraception, chastity belts, and infanticide (even into the 19th century in the guise of selected wet nurses and foundling homes with high infant mortality rates). Medical advances have added the surgical techniques of sterilization and abortion.

Abortion is currently safe and legal in almost all developed countries. But 40% of women live in countries with highly restrictive laws. Virtually all of these are developing nations including most of Africa and Latin America. A global survey by the Guttmacher Institute estimated that almost half of the world's 40 or so million abortions each year are illegal, and these tend to be unsafe. Every year about 70,000 women die and another eight million suffer complications from abortions.

More than half the women who die from unsafe abortions live in sub-Saharan Africa, which is also the area with the highest rate of maternal mortality and the lowest rate of contraceptive use. The Population Reference Bureau found that about one-fourth the married women in sub-Saharan Africa use family planning methods and another fourth want to limit or delay births but are unable to. It's essential to improve access to family planning for those who want it. +++

In countries where abortion is legal, it seems possible for most people to agree to policies that limit the numbers of abortions performed if this could be done without reducing women's choices. Netherlands provides a model of both low abortion rates *and* low birth rates, with comprehensive sex education in schools, free medical care for pregnant women and babies, a mother's allowance, and other measures that support women who choose to bear unplanned babies while at the same time making the necessity for this choice much less likely.

Beyond these issues of health and of equity for women, Theresa Brennan says that "the current mess" of industrial over-development, centralization, and unsustainable expansion is based on a root mistake related to mothers. "That mistake is evident in the formal downgrading of the social and economic power of women as mothers." She says the mistake is of long standing, perhaps 150 years in the West, but it can be overcome. +++

Land Ownership and Reform

All systematic oppression ultimately derives from unfair land policies.
~Dr. Harold Kyriazi, *Libertarian Party at Sea on Land*

In the West we tend to forget that one-third of the world's people are peasants and do not necessarily want to be anything else, as long as they can make a living from small-scale farming. (The "anything else" includes working on large plantations or in sweatshops, or subsisting in enormous shantytowns ringing megacities.) However many of the world's farms are too small to sustain a family. Of an estimated 525 million farms, 85% of them are less than five acres, most in Asia. In many post-colonial countries especially in Latin America, members of the previous colonial class still own much of the land. Land ownership is often extremely concentrated in the hands of a few families, and landowners may take a large fraction of the small tenant farmer's production. For instance in Bolivia, despite reforms in 1952 and 1996, five percent of the population owns 70% of the productive land. (A new reform bill was passed in 2006.)

The need for land reform has been at the heart of many so-called communist revolutions as well as the recent election of leftist governments in Latin America and elsewhere. In fact, there have been constant social upheavals about land ownership throughout history, dating as far back as ancient Egypt and Rome where the priestly class or the noble senatorial class owned most of the good land. Almost every country has had one or more periods of changes in agrarian laws since the 18th century. In Ireland, land reform became the main issue after the Irish famine, since most of the land was owned by the Protestant Ascendancy. After the U.S. Civil War, the Radical Republicans wanted to give 'forty acres and a mule' to newly-freed slaves but this plan was rejected, leaving Southern blacks without an economic base and 'free' to become sharecroppers.

Some land reform has been quite violent, as in China's agrarian revolution, when Mao encouraged peasants to kill their landlords. Up to three million landlords and family members died in beatings or public executions. A second Chinese land reform forced peasants to farm collectively but, as in the USSR, collective farms showed weak production. China is moving back towards individual ownership. The most successful and lasting land reforms have been non-violent. The land value tax advocated by followers of Henry George could be viewed as a market-based version of land reform.

According to a paper written by Alain de Janvry and Elisabeth Sadoulet for a World Bank workshop, the usual approach to land reform has been expropriation based on the social functions of the land, that is, whether it is being used productively or if it serves social justice. Expropriations may be compensated or partly compensated. The country may pass laws defining the maximum size of holdings. The authors say there are many paths of access to land besides expropriation. These include negotiated recuperation of land for settling the landless poor, a process which the authors say is the cheapest approach and least lending to conflict, yet very much under-explored. In some cases, governments redistribute large tracts held under illegitimate land titles. One law, the *Ley de Quota Parte*, asks landowners to surrender in land

the increased value of their assets that has been created by public investments in infrastructure. Other plans are assisted land purchase and assisted land rental.

Some examples of successful land reform are in India where after gaining independence, several states including West Bengal, Jammu, Kashmir, and Kerala mediated land reforms that resulted in much more equitable land distribution. Wikipedia says that land reform in Taiwan and South Korea after WW II preceded a multi-decade economic boom. In the United States, some Native American tribes such as the Winnebago and Pawnee are buying back land that was part of their ancestral territories and putting it into federal trust, especially to protect burial grounds and sacred sites but also to provide tribes land for farming and timber. Between 1998 and 2007 various tribes put over 840,000 acres into trust. They have given up waiting for the U.S. government to honor treaties dating back to the 18th century.

Here in the United States about two-thirds own their own homes, one-third rent, and an estimated 2.3 to 3.5 million are homeless (the number is rising). Despite all that home ownership, about three percent of U.S. population controls 97 percent of privately-owned land. Oil and timber companies are the largest landowners, followed by large cattle ranchers and other agribusinesses. Maybe the USA also needs land reform? The issue of land reform brings old questions to the foreground about private property. At what point in history does land ownership acquire its legitimacy? In most countries, there has been a succession of ownership by force. The last occupation writes the land deeds.

At the very least, we need to be aware that one-third of our species remain peasants, that many of them own little or no land, and that this is an important context behind the superficial news about world events. Also, land distribution is something we must take into account for the future, as ever more people divide up the same amount of land.

What if land were owned equitably? According to the CIA Factbook, the world has about 3.98 billion acres of arable land. There are at present about seven billion people on Earth. If land were divided up equally, each person would then have less than 3/5 of an acre to sustain all of his or her needs. With nine billion people, each one's birthright would dwindle to 2/5 of an acre, and that doesn't account for soil lost through erosion or pollution. While that might sound like a big-enough vegetable garden—about four standard city lots—remember that this hypothetical homestead area must produce staple grains and all other food sufficient for the entire year, not supplemented by other food from the grocery store or market, as well as fibers and animal feed.

Of course arable land is not divided up equitably, and much of it is currently used to grow commodities such as tobacco, opium, and feedstock for bio-fuels.

Buying up Nature

Destroy the seed of evil, or it will grow up to your ruin.
~Aesop, Greek writer, c, 620-564 B.C.

Corporations and richer nations are buying up cheap arable land in undeveloped countries. For instance, in 2008 the South Korean corporation Daewoo Logistics acquired a 99-year-lease on almost half the arable land of Madagascar, with a memorandum of understanding that Daewoo would not have to pay anything, because the land is "totally undeveloped." Development consists of cutting down native rain forest to grow crops. (Note that deforestation is a major cause driving climate change.)

Daewoo plans to grow corn to increase food security in South Korea, also oil palm trees. Both crops have a destructive effect on the environment: corn uses a lot of pesticides and erodes the soil; large palm oil plantations destroy habitat and reduce biodiversity. It happens that Madagascar is one of the world's biodiversity hotspots (treasures) with 150,000 species that exist only in this island (the size of two Arizonas). Madagascar is home to all of the world's lemurs, half of its chameleon species, and 300 species of frogs that are unique to this one place.

About 20 million people live in Madagascar where WFP, a UN agency, says over two-thirds of them live below the poverty line. The government and economy has been unstable for several years. About two million Malagasy children below the age of 15 are working at hard and hazardous jobs, such as crushing stones, rather than going to school. WFP says "Some 50 per cent of children under three years of age suffer retarded growth due to a chronically inadequate diet." Yet a weak government gave away half of their patrimony.

What kind of world sanctifies money transactions above the claims of malnourished children, unique species, and the commons of an entire people?

On the other hand, what sort of international legal structure could *protect* the world's poorest people from losing their birthright of land to large investors, absentee landlords, and transnational greed? Suppose the world's nations negotiated a treaty that drastically restricted the number of acres that a foreign entity could buy in other countries. Those holdout nations who refused to join the treaty (which might include the United States among other economic imperialists) would at least stand before the rest of the world as pariahs. And the sale of very large properties to any one entity, foreign or domestic, could be made subject to a citizen referendum in the affected country. +++

In Latin America, many indigenous peoples are actively opposing large-scale development projects and other land invasions that have already destroyed large swaths of the forests which are their home and which provide their sustenance. Protests target roads, dams, mining operations, and oil exploration, sometimes derailing the projects. They may demand that governments enforce laws that mandate "prior consultation" with the affected communities before companies begin to mine and drill. This indigenous self-defense is a growing movement.

Protecting Our Commons of Seeds: If somebody conducted a contest for 'Most Evil Corporation,' the Monsanto Company would be a top contender. Monsanto is a multinational agricultural biotechnology corporation that controls 23% of the world's seed industry. The proprietary seed market (seed that is subject to exclusive monopoly because it is considered intellectual property), accounts for 82% of the commercial seed market worldwide—but Monsanto is the biggest and meanest of the lot. It owns 90% of the world's patents for GM seed including cotton, soybeans, corn, sugar beets and canola. The company's speciality is developing genetically modified crops that are resistant to the pesticides or herbicides used in tandem with them—and which Monsanto also produces.

Monsanto bears a good deal of responsibility for the single largest wave of recorded suicides in human history: the ongoing deaths of a quarter of a million Indian farmers over the past 16 years. About two-thirds of India's people are directly or indirectly dependent on agriculture. Indian activist Vandana Shiva points out that Indian farmers were already struggling with falling prices in the global agricultural economy. The suicides began when farmers lost control of their seed supply to the corporate chemical industry, leading to higher production costs and indebtedness. Cotton farmers were hit especially hard. A coalition of cotton farmer organizations stated that Bt cotton, advertised to reduce the cost of cultivation, in fact increased the cost. After

Monsanto introduced its Bt cotton in 2002, the number of farmer suicides increased greatly—sometimes by drinking the insecticides Monsanto supplied. The UK's *Daily Mail* described the epidemic of suicides as 'The GM Genocide.'

Another tragedy unfolds in Argentina, where Roundup Ready soy is now grown on over half of Argentina's cultivated land. The herbicide Roundup is massively sprayed across the fertile Pampas. Rates of cancer, birth deformities, and sterility are steadily rising in these areas of chemical monoculture. Argentina's government mainly ignores the health problems, because exporting soy to the EU and China is now a major income source at about $16 billion/year.

Brazil is the world's second largest user of GM seeds, and RoundUp Ready soy makes up 85% of all soy grown in the country. A Brazilian court recently ruled against a dirty little trick used by Monsanto: the company tests farms and charges farmers a hefty fine of 2-3% of crop sales if any traces of Monsanto GE seeds are present—even without farmers' knowledge or desire. This 'genetic drift' is almost impossible to prevent.

Many European and UK farmers and consumers have resisted GM crops and foods. Until recently the EU supported this position: however, in a document obtained by Wikileaks, Monsanto asked the U.S. government to maintain its strong pressure on the European Union to legislate for the introduction of GMO foods in what some described as "a military-styled trade war." After moves in France to ban a Monsanto GM corn variety, the U.S. embassy recommended that "we calibrate a target retaliation list that causes some pain across the EU."

In the United States, Monsanto controls 86% of corn crops and 93% of cotton, soybean, and canola crops. American farmers are certainly not safe from Monsanto, which aggressively sues them for the presence of genetically modified seeds that have accidentally contaminated their fields. Greenpeace says "The patents that rest on Monsanto's GE seeds have made US farmers almost defenceless when faced with litigations. It has led to a truly new era in which farmers are being sued and harassed for doing what they have always done: saving seeds."

What kind of international treaty or global referendum can protect the commons of our seedstock that has been developed by human cultures over the course of about 10,000 years? How can the world bring a criminal corporation to justice? We urgently need these answers.

Several U.S. groups have formed in opposition to Monsanto and its corporate policies. The Anti-Monsanto Project organized 'Global Days of Action to Shut Down Monsanto' in March 2012. The organization 'Millions Against Monsanto' brings together small farmers, organic consumers, veterans who remember Agent Orange, environmentalists, and others. A lawsuit against Monsanto has several plaintiffs led by Jim Gerritsen, president of the Organic Seed Growers and Trade Association. California has a referendum campaign to mandate labeling of GM foods—which is already done in 49 other countries, including all of Europe. In Hawaii, a global center for Monsanto's open-air field testing of experimental GE crops, protesters are demanding that Monsanto leave the islands. +++

As of July 2012, yet more farmers and consumers are organizing against the "Monsanto rider" which a House representative slipped into the huge FY 2013 Agricultural Appropriations bill. The rider requires the Secretary of Agriculture to grant a temporary permit for planting a genetically engineered crop, even despite a federal court's order to wait for completion of an Environmental Impact Statement. Besides the threat to constitutional separation of powers, the plan could be disastrous for farmers who depend on the export market, where increasing numbers of countries are requiring that foods be non-GM.

Megacities: In 2007 the population of the world became more than half urban. Increasing numbers of people live in megacities—defined as urban areas with over 10 million residents. In 2012 there were 27 such cities, such as Tokyo with 36s million inhabitants. Asia has the largest cities but Latin America is now the most urbanized continent. In Brazil, 84% live in cities. Over the next decade, Lagos, Nigeria (population 12 million) is expected to be the fastest growing megacity (others say it will be Dhaka, in Bangladesh). These gigantic constellations of human beings face many problems: sanitation, access to water, streets clogged with traffic.

Many third world cities are filled with poor and unemployed people—former peasants who could no longer earn a living farming, in many cases because of trade policies determined by the more developed nations. Robert Neuwirth says that about one billion people live in squatter communities or shantytowns. In the slums, people are cut off from basic infrastructure such as running tap water and sewage systems.

Of the next 1.1 billion people expected to arrive by 2030, more than half will be living in under-serviced slums unless sustainable development is a world priority. Sustainable development includes improved access to clean water, rooftop gardens as local food sources, improved mass transit to reduce carbon emissions from cars, more recycling, and community insurance pools for poor farmers to cover losses of livestock and crops so that they don't need to migrate to these huge slums. +++

Access to clean water not only prevents disease but also increases school attendance for girls, frees up women's time (from carrying water) so they can pursue incomes, and in some cases, saves a family the huge expense of buying water. Between 1990 and 2010, more than two billion people gained better access to water because of a Millennium Development Goal commited to by the world's nations and several non-governmental organizations. +++

Water: Commons and Crisis

Water is not a commodity to be sold or squandered or hoarded.
~Jay Walljasper, "Water for All"

Next to air, water is the most vital need for human life. (The survival rule of thumb is three minutes without air, three days without drinking water.) Yet this life-giving necessity is under threat from depletion, pollution, population growth, economic growth, global warming, and commodification of water by multinational corporations. There's only so much water, and unequal access to it causes conflicts between communities and water wars between countries.

China has a water crisis. With 20% of world population, she has only seven percent of global water resources, and much of that is polluted. The majority of Chinese live north of the Yangtze River but the region south of the river has most of the water. Although a drought in Southwest China threatens the drinking water supply of 14 million people there, the Chinese government plans to divert water from the region's rivers to northern China, which is even drier. The World Bank predicts China will have 30 million environmental refugees by 2020 due to water stress.

Since 1960, world water use has tripled. Groundwater is being consumed faster than it can be replenished in the American West and many other places. Maude Barlow, author of *Blue Covenant*, says that 36 states in the USA are water stressed. For instance, deep bore wells are sucking up groundwater that should be feeding Lake Michigan, reversing the natural flow. Many world cities are over-pumping their underground sources.

Barlow says that we have interrupted the hydrological cycle across the planet first, by farming in deserts, and second, by taking up water from aquifers or watersheds and sending it to

cities and megacities. She argues that our mismanagement of water is one of the causes of climate change, as well as being affected by it. Global warming will intensify current droughts in southern Europe, the Mideast and North Africa, South Australia, and the U.S. Southwest, inevitably leading to climate refugees.

The UN says that every person is entitled to 20 liters a day (about five gallons) of safe water for drinking, hygiene, and growing food for sustenance. The average European uses 200 liters a day and each U.S. citizen up to 400 liters. Meanwhile in the developing world, the average person has less than 10 liters of water daily—and it is contaminated. This household use of water accounts for a small fraction of the water we use in developed countries. Hundreds of gallons more are embedded in daily products. The Water Footprint Organization defines the water footprint as "the total amount of freshwater that is used to produce the goods and services consumed by the individual as a result of one's own consumption pattern and country of residence." To produce a ream of white paper requires 1,321 gallons, a pound of beef costs 1,857 gallons, and a pair of jeans 2,866 gallons. One's footprint depends on one's diet and general level of consumption. Calculations of national water footprints indicate that the USA has the largest at 2,480 cubic meters per person per year. The world average is exactly half that.

Harkinson points out ways in which perverse incentives increase U.S. water consumption and waste, for instance a farm bill that spends $263 million to promote water conservation, but $5 billion to support water-intensive crops such as rice, soybeans, and cotton, often in semi-arid regions in the Southwest. Also, efficient technologies such as drip irrigation systems are expensive for farmers when "profits depend on shoppers with no sense of a vegetable's water footprint." The Alliance for Water Stewardship, made up of a water industry trade group and five environmental organizations, plans to certify businesses as "water stewards" and possibly introduce an eco-label. Although there is as yet no internationally accepted formula for a water footprint, a Finnish food conglomerate, Raisio, started to print the water footprint of their products on the package. +++

To conserve water, Peter Rogers, Professor of Environmental Engineering at Harvard, recommends raising water prices in developed countries, especially for the largest consumers. Reducing water used for irrigation would make a huge difference. Water for crops could be harvested as rain and snow in the non-growing season and stored underground so as to limit loss from evaporation. Other needs are to plug leaks in the irrigation delivery system and convert more systems to drip irrigation. +++ Rogers also says that nations of the world need to invest several trillions of dollars in their water infrastructure in order to prevent leaks and breaches. However, agencies such as the IMF have often linked funding for this with privatization.

Inequities in who gets limited water supplies depend on economic and political power. One example: The Ogallala Aquifer, a massive underground lake (174,000 square miles) underneath eight Great Plains states, is already over-pumped, but a columnist for *The Examiner* says that Texas oil billionaire T. Boone Pickens has a little known scheme for heavily pumping the Ogallala Aquifer in order to sell water in the Dallas area.

International corporations such as GE, Dow Chemical, and Proctor and Gamble are getting into the water business in a big way. Barlow says water has become a multi-billion-dollar industry "overnight" with a dozen indexes on the Stock Exchange. The model is privatization and deregulation. But there has been a lot of grass-roots resistance to this, especially in Latin America. Barlow describes the current situation:

There is a race going on over who's going to control water, whether it will be seen as a public commons, a public trust, and part of our collective heritage that also belongs to the earth—or whether it will be controlled by private corporations, and I don't know who will win….The thing that is so stunning, especially in the global south, is that when you are dealing with water, you are dealing with life and death. [People] are willing to go to the wall for it.

Barlow adds that we need new laws at every level, from municipal to international, both to protect water ecologically and to protect it as a human right +++

The United States needs a comprehensive national water policy. Environmental planner and filmmaker Jim Thebaut (*The American Southwest: Are We Running Dry?*) says that no state or region seems to have a Plan B for problems of severe drought and overuse. He says that some major cities lose 40% of their water because of century-old infrastructure. Thebaut notes that 20 different federal agencies deal with water, so we lack a unified policy.

The United Nations says that by 2025, 1.8 billion people or a quarter of the world's population will be living in regions with absolute water scarcity. That is a recipe for refugees and war. Some water conflicts have already turned into wars, according to the *Washington Post*:

Turkey, Syria, and Iraq bristle over the Euphrates and Tigris rivers. Sudan, Ethiopia, and Egypt trade threats over the Nile. The United Nations has said water scarcity is behind the bloody wars in Sudan's Darfur region. In Somalia, drought has spawned warlords and armies.

A very positive development is *sharing water* such as the Nile Plan negotiated by nine African countries within the Nile River Basin. They are replacing a 1929 treaty from the colonial era when Britain claimed most of the Nile's water for British cotton plantations in Egypt and Sudan and denied a fair share to upriver countries such as Ethiopia, Uganda, Kenya, and Rwanda. This time around, agreements are developing from two constructive approaches. First is the attitude of negotiators who, according to Egyptian representative Abdel Fattah Metawie, are focused on developing "win-win" projects that benefit several countries. This cooperative approach combines each country's advantages. Irrigated crops from central Africa may feed Egypt, with Ethiopian dams supplying hydroelectric power across the region. A regional approach might replace Egypt's Lake Nasser, a desert reservoir that loses much of its water to evaporation, with another reservoir in the cooler highlands of Ethiopia. +++

The second positive approach is that people are looking for sustainable solutions, because they realize that the waters of the Nile are finite and can be depleted. One shared problem, according to Metawie, is that much water is currently wasted or not caught from rains upriver. Drought and rising temperatures have lowered the level of the huge Lake Victoria that starts the Nile flow from the jungle and it is evident that all the countries need a long-term vision.

World Health: What kills more of the world's people than any other cause? Answer: untreated human excrement, an enormous problem that is seldom discussed. Across the world, four in ten people have no access to any kind of latrine or toilet, even a bucket. They defecate wherever they can, in alleys or by train tracks. Rose George says in a recent book that where modern sanitation exists, it adds 20 years to the average lifespan. But even in the rich countries, population growth burdens sanitation systems and not every sewage plant is state of the art. Thus 90% of the world's sewage ends up in oceans, rivers, and lakes without treatment. (And this pollution kills marine life.) Most world sickness is related to unsafe water and inadequate

sanitation. A UN study estimates that the African continent loses five percent of its GDP to illness and death from these causes. There is no way to measure human suffering.

Many possible remedies and technical fixes range from composting toilets to biogas digesters that turn waste into fuel. Julie Chowdhury of the Swedish Committee for Afghanistan says that it would take only $9.5 billion a year for the world to provide everyone with a toilet by 2025. (For comparison, $10 billion equals Proctor and Gamble's annual sales, one month's fighting in Afhanistan, or the cost of the Life Extension Program (LEP) for the B61 nuclear warhead.)

Development policy needs to focus on basic needs such as clean water and sanitation before it encourages industrialization and massive construction projects.

Human diseases such as influenza, smallpox, measles, and whooping cough were borrowed from domesticated animals. New hybrid mutant viruses are now growing in virulence, major public health risks linked to rapid growth of the livestock industry and especially the intensive growing of chickens. Michael Greger, M.D., Director of Public Health and Animal Agriculture at the U.S. Humane Society, says that unprecedented changes in avian and swine influenza in recent decades appear to be due to industrialization of the chicken and pork industries. The world's leading health agencies—WHO, FAO, and the World Organization of Animal Health—blame chicken factories in large part for avian flu, H_5N_1.

The American Public Health Association has called for a moratorium on factory farms altogether. One consideration is that the food animal industry routinely uses antibiotics to counter stress on animals from the crowded and unnatural conditions in which they are raised. This practice contributes to antibiotic-resistant bacteria and ineffective drugs. The Union of Concerned Scientists estimates that as much as 70% of the antibiotics used in the USA are for healthy food animals rather than for people. Proposed legislation would require industrial farms to stop this practice. Relatively simple and inexpensive measures could reduce the stress on animals that threatens their health and through them, human health. One such measure would give pigs straw to lie on so they don't live their entire lives on bare concrete. Another would ban gestation crates that severely restrict the natural motion of sows; Europe has already banned them. Individuals can help by eating less meat and when they do eat it, buying it from local, small-scale farmers who treat their animals with more respect and care. +++

Disaster Aid

Disaster is not something for which the poorest have to wait; it is a frequent occurrence.
~Partha Dasgupta, Cambridge University

In a world proud of its technological progress and economic efficiency, one sees over and over again a completely inadequate response both to natural disasters and the plight of civilians caught in armed conflicts and genocides. Kurds during the Gulf War, Rwanda, Congo, Darfur, Hurricane Katrina, the Christmas tsunami, and Haiti's massive earthquake all pass before our horrified eyes as though humanity is helpless against anything unpredictable. And yet most of these events could in fact be predicted, though not to the exact day or year. Food and blankets can be flown in by the Boeing-full, but time is of the essence. A victim can't wait weeks to be pulled from the rubble, or for drinking water, sanitation, and treatment of injuries.

While the USA has a tradition of generous humanitarian aid, it is a dubious plan to put U.S. military in full charge of disasters. The core military mission is to kill people, not rescue them. Reportedly, upper echelons of the U.S. armed forces were not comfortable with their Haitian

mission, although rank-and-file soldiers tend to like projects where they are directly helping people. The Pentagon is a very large bureaucracy, and in Haiti the U.S. military seemed to be conducting a turf war with the UN and aid groups, delaying organizations such as Doctors Without Borders and the World Food Program, and more concerned with security than saving lives. In fact, some cynics accused the United States of conducting a military occupation in order to impose a sweatshop and tourism economy on Haiti ("disaster capitalism").

We can predict that climate change will result in more floods, droughts, and violent weather events, many of them in poor countries. What the world needs is unified planning ahead, a clear chain of responsibility, and adequate support. The UN is the most logical agency to oversee disasters and coordinate aid agencies. It has done so in the past. However, the UN appears not to have sufficient equipment, such as helicopters, and that lack should be supplied by member nations. One possibility is for every continent to have a UN disaster coordinating center located in an area of that continent least susceptible to natural disasters. Nations could make plans and pacts ahead of time and each center could stockpile supplies adequate for a large-scale event. Thus each would be positioned for rapid response. These centers could also conduct research on prediction and preventive measures. Positive prevention is very important to avert disasters, and sometimes it needed to have started 30 or 50 years ago. At least we can start now. +++

World Poverty and Inequity

In Mumbai, India, a city of nearly 20 million people where the average yearly income is $500 U.S. dollars, a billion dollar private skyscraper is being built for the richest man in Asia [Mukesh Ambani, Chairman of Reliance Industries] with ample parking space for his 168 cars. Adbusters, March/April 2009

According to a 2007 report, the world's median income—received by the person right in the middle—is about $900 a year; the *Boston Globe* puts it at $1,700. Using the higher figure means that three and a half billion of us earn more, while 3 ½ billion earn less than about $140 a month. In contrast, the *average* world income is $7,000 per capita. Some incomes in rich countries reach so high they make the world average more than four times higher than the median income.

These stats are per capita—dividing the world's economy by everybody including babies, old people, unemployed, and institutionalized. That's not the same as household income. The U.S. average-per-capita income is about $21,000, according to U.S. Census statistics, or three times the world average. Ratings by the IMF, World Bank, and CIA show countries with capita incomes very near the world average of $7,000 as Ukraine, Algeria, Albania, and Belize. That works out to about $583 a month. Some U.S. Social Security recipients receive a similar amount after deductions for Medicare.

Let's put the situation in everyday terms that Americans could visualize. According to my own personal experience, a person in the United States requires about twice the world average, or $12,000, to live a simple, frugal life—assuming he or she does not have large medical or dental expenses and does have access to mass transportation or already owns a reliable vehicle. An automobile can consume a fourth or more of a poor person's income. Subsistence would require more income in large cities with high rents and less in some rural places, depending on local cost of living. A possible rule of thumb might be that subsistence = one/third of the median household income for that state or city.

The U.S. minimum wage is $7.25/hour, which for a full-time worker works out to about $15,000 a year minus FICA and income taxes or $14,000—subsistence for one person, but not

for two or three. It is often said that minimum wage is supposed to be a 'starter' wage for teen-agers, but about half of those who receive minimum wage are 25 and over. Even some of those under 25 might be ready to marry and start a family if they could afford it. Minimum wage workers (3.6 million) are largely employed in service occupations, also sales and office, and transport jobs. Uncounted others are self-employed at low income or they earn just slightly above minimum wage.

Many middle-class people find it hard to put themselves in the shoes of a U.S. working person who earns minimum wage. Try to imagine, then, the daily life of billions of people who survive on so much less. Peace Corps veterans, aid workers, and travelers to Third World countries are acquainted with some of these scenes of desperation. How does anyone justify the inequities that exist in our contemporary world? Imagine what it would be like for several billion people if we could somehow bring the world median income up to the current world average, where people have a modicum of security and opportunities. Would we feel the rush of hope and happiness? A start at achieving this could be made with a BIG plan funded by a Tobin-like tax on international financial transactions. (See previous chapter.)

At the same time, many in the rich countries could live much more modestly without any real sacrifice and even with more contentment. According to Josh Kester, a doctoral candidate who attended the 2012 Happiness Conference in Seattle, research shows that Americans tend to feel happier attaining about $30,000 a year. But after that point, increased wealth has little influence on happiness.

We in the United States need to reverse the custom of making our models of people who have high incomes. The aggressive pursuit of money is often stressful and unhealthy for the individual, and may lead people to neglect their families as well as their own self-actualization. Conspicuous consumption is vulgar, and hoarding is dysfunctional behavior for humans. Besides, somewhere in their hearts those in the rich countries must realize that their relative good fortune has come at the expense of others such as those in former colonies. We would do better to copy the memes of those who live simply and comfortably on moderate incomes.

Part Three: What Hath Man Wrought?

We've arranged a global civilization in which most crucial elements profoundly depend on science and technology. We have also arranged things so that almost no one understands science and technology. This is a prescription for disaster. We might get away with it for a while, but sooner or later this combustible mixture of ignorance and power is going to blow up in our faces.
~ Carl Sagan*, The Demon-Haunted World: Science as a Candle in the Dark*

The situation that Sagan laments above is related to issues of complexity such as are raised by Tainter. Western industrial nations have become quite dependent on their technologies, but even as these make individual lives more convenient they make civilization more complicated and energy-expensive. The degree of specialization in modern society is so great that every day most people are using advanced tools that they don't understand, don't know how to repair, and couldn't possibly recreate by themselves. For instance, I have no idea what goes on inside my refrigerator, my car, or the computer on which I'm writing. Even those handy-persons with a better grasp of common technologies may not know much about biology or ecology or the basics of the scientific method.

Another difficulty is the common assumption that science-and-technology is one entity. But they are not necessarily the same thing. There is the scientific method, and there is the tool-making animal, and then there is also the capitalist who wants to make a product and sell it. Because we have linked all three together, we assume that this is one seamless process. Modern science was sent in this technology direction by Francis Bacon and others in the 17th century. Yet even now there are pure sciences not intimately connected to 'making a buck.' There are sciences that don't lend themselves easily to new technologies or entrepreneurship. Think of field biologists, archaeologists, astronomers, and meteorologists.

Science itself may be defined as a method or as a body of established knowledge or both. Merriam Webster says it is "knowledge or a system of knowledge covering general truths or the operation of general laws especially as obtained and tested through the scientific method and concerned with the physical world and its phenomena." In any case, knowledge is not things. Science underlies technology but it is not the same, and it certainly does not justify every technology.

A well-made hand-tool is a beautiful object and to some degree I can empathize with those (mostly men) who seem to be in love with science-and-technology. Our tools are certainly getting more complex—but are they always getting better?

I am no Luddite who refuses to use any modern technologies but I do prefer those that last, that are not continually loaded with new bells and whistles to make last year's model obsolete. I would like to use tools made so that I can understand and repair them (a policy that Paul Goodman proposed many years ago). Most of all, I would prefer *appropriate technologies* that do not poison the planet.

Chapter 12
Dangerous Technology

All our lauded technological progress—our very civilization—is like the axe in the hand of the pathological criminal.

~Albert Einstein

Modern humans are not the only self-destructive species, since some bacteria and viruses may kill their host, although most of them have strategies for moving to another host in order to repeat the process. So far our only such strategy—space colonization—depends on a future breakthrough in energy technology. Unlike those others with instinctual strategies built-in over eons, we are flying by the seat of our pants. Risk-taking heroes make entertaining movies but poor models for an entire species.

Who chooses which technologies we will use? Certainly I was never asked to vote on any of them, GMO or nuclear electricity or nanotech. Proponents of techno-utopia insist not only that technology is wonderful but that its current developments are *inevitable*. The idea spreads that technology is an immutable force. For instance, in an issue of *Futurist* magazine that focuses on the "technology revolution," various writers talk about "relentless advances," "what technology has in store for us," and "*when* we'll see the evolving technologies that *will* radically reshape human life (my emphasis)." People forget that this is about products, in a market economy.

As technologies take on a life of their own, we mere human individuals are supposed to adapt to our technological fate. Those who doubt and disagree are marginalized in various ways. Political theorist Francis Fukuyama says that conflict between the scientific community and religious fundamentalists is especially unfortunate because it leads many to assume that the only reason to object to advances in biotechnology is because of one's religious belief. Other dissidents from various fated technologies are dismissed as neo-Luddites or as naïve and romantic environmentalists.

Technology has now outrun science and it has certainly outrun any democratic control over it. The fifth area of urgent change is to find ways to step back from technologies that already threaten human survival: evaluate them, regulate them, and consider banning some globally. These include unregulated toxic chemicals, nuclear electricity with its waste, non-ionizing radiation (microwaves), and gigantic machines that can render large ranges of the ocean lifeless, turn whole forests into wood pulp, or take the tops off mountains. Another is genetic engineering especially as being applied to modify and monopolize the world's food crops (GM or GMO).

Dangerous military tech includes science-fictional weapons in various stages of research or development, including those for space warfare. Several fields that are developing somewhat in tandem are germline genetic engineering, nanotechnology, and robotics (collectively known as GNR). These have both military and industrial/consumer applications. According to the *Ecologist* magazine, scientists are more worried than the public is about the potential for harm to health and environment from nanotech (30% compared to 20%). All three fields have potentials for dire developments, but we are not having any public debate about any of them.

Another new field is synthetic biology, the advancing tip of biotechnology. As described by Jaron Lanier in *Discover* magazine, it is mostly about making artificial biology more like computer computation. Lanier says synthetic biology may turn out to be the most important technology of the 21st century, the course of its development depending on whether it will more

nearly resemble computer hardware or software. Lanier, a pioneer of virtual reality, says if this field progresses "in the accelerating way that computer hardware does, we will be in for quite a ride. It's hard to predict how weird things could get, so one is tempted to max out deliriously as a futurist." The article's enthusiastic heading suggests that "We could create novel life or transform ourselves into astonishing new forms," with wings or lavender skin just the beginning.

Delirious futures aside, here are just a few indications of the current, mundane problems with technologies. The United States has more than 12,000 chemical plants producing or using hazardous materials that could endanger people in case of an accident or attack, with an estimated 7,000 of them considered high-risk. About 100 of these high-risk factories are situated in or near urban areas so that more than a million people live within the 'vulnerability zone' of each. The Department of Homeland Security has acknowledged the problem and set up an inspection program in 2007, but on a very tight budget with only 80 regulators for the whole U.S.

Jacques-Yves Cousteau, the deep-sea explorer, described the ocean transport of hazardous materials such as oil and tetraethyl lead, saying that the increased incidence of accidents and oil spills is due to the fact such transport is not regulated by international law. Most such tankers fly under a flag of convenience and can hire anyone they want including incompetents and alcoholics. The large ships used are hard to maneuver and can take almost four miles to stop, potentially making a collision unavoidable. Other deficiencies are that such ships travel with only one officer watching at the bridge, whereas there should be two at all times, and that they have only a single hull, engine, propeller, and steering mechanism.

Cousteau asks, "When one of the old ships that carries nuclear waste from Japan to France runs aground, what will happen to the tons of plutonium littered on the shore [and radioactive] for 250,000 years?" He wrote this in the 1990s but to my knowledge conditions have not changed. The very first action to take in regard to the chemical plants and the ocean transport of hazardous materials is much tighter regulation and inspection. If humans cannot manage even such a basic step, do we have any business manufacturing and transporting these substances?

Artificial Intelligence and Robotics

We don't even agree on what exactly defines intelligence and already we are creating artificial ones….Looking at human civilization with its diverse cultural, religious, ethical and moral values, what exactly are we trying to create here and to what purpose?
~Links 999, "Ethics and moral issues regarding AI"

At the 2009 Asilomar Conference of computer scientists and roboticists, researchers debated whether there should be limits on research that might lead to loss of human control over human destiny. Among the problems discussed at Asilomar are these:

Some computer viruses have already reached "cockroach intelligence" and are almost impossible to exterminate.

Automation is destroying an ever wider range of jobs.

Robots that can kill autonomously are already feasible, and Predator drones come close to this, although still subject to remote control.

Criminals could easily take advantage of artificial intelligence, in a number of ways.

Meanwhile, not only are many nations entranced with aerial drones as military equipment, but in the United States the pressure is on to use them for civilian surveillance and military testing on home ground. Police departments, border patrols, power officials, news organizations, ranchers, and others want drones to have the same access to airspace as manned aircraft do. It would be a great boon for the aerospace industry. Naturally, there are both privacy and safety issues, not to mention the abuse of power possibilities.

About 50 years ago, mathematician I. J. Good first proposed the idea of an "intelligence explosion" with smart machines designing ever more intelligent machines. In 1993, computer scientist and science fiction writer Vernor Vinge wrote "Within thirty years, we will have the technological means to create superhuman intelligence. Shortly after, the human era will be ended." Vinge's term for this almost inevitable future event was 'The Singularity.'

Some people can't wait for the advent of superhuman intelligence. Stewart Brand and Ray Kurzweil are among the advocates or devotees of the Singularity. Kurzweil recently produced a very popular documentary, "The Transcendent Man" with his vision of a world in which humans merge with machines. As Dr. Eric Horovitz noted at the Asilomar Conference, "Something new has taken place in the past five to eight years. Technologists are providing almost religious visions, and their ideas are resonating in some ways with the same idea of the Rapture."

Technology has for some taken the place of religion, or it is itself a religion. While the Singularity could conceivably create a blissful human future, there are absolutely no guarantees. AI is one powerful technology from which there may be no turning back. Vinge says "If the Singularity can not be prevented or confined, just how bad could the Post-Human era be? Well ... pretty bad. The physical extinction of the human race is one possibility….Yet physical extinction may not be the scariest possibility..." He goes on to describe a very much diminished human race, serving superior intelligence much as domestic animals have served humans.

If, as Vinge believes, the Singularity is slated for 2023 or sooner, we are now only a decade away from this crucial event. Can we do anything to change it? Vinge gives a ray of hope:

> I have argued above that we cannot prevent the Singularity, that its coming is an inevitable consequence of the humans' natural competitiveness and the possibilities inherent in technology. And yet ... we are the initiators. Even the largest avalanche is triggered by small things. We have the freedom to establish initial conditions, make things happen in ways that are less inimical than others. Of course (as with starting avalanches), it may not be clear what the right guiding nudge really is.

Nick Bostrom, an Oxford University philosopher who has written extensively about AI, notes that "The setting up of initial conditions, and in particular the selection of a top-level goal for the superintelligence, is of the utmost importance. Our entire future may hinge on how we solve these problems."

Bostrom's best advice is to implement superintelligence"with great care" as soon as possible because "superintelligence could help us reduce or eliminate other existential risks such as the risk that advanced nanotechnology will be used by humans in warfare or terrorism, a serious threat to the long-term survival of intelligent life on earth." Thus we would use one new and risky technology to help protect us from another new and risky technology.

Do you wonder what the seven billion human residents of Earth would want to do, if they were educated about this issue? Most of them have never heard of it. Who makes the decisions for all of us?

Neo-Luddites

We need to examine the ethics of conducting experiments for which there is no known outcome but which could have catastrophic results.
~Marq de Villiers, *The End*

Anyone who suggests turning back from any sort of technology is accused of being a Luddite or technophobe. For instance, Bill Joy, founder of Sun Microsystems, has called for restrictions on research into certain dangerous technologies, specifically nanotechnology. In answer, Michael Specter says in *Denialism*:

> The most promising technologies always present the biggest dangers. That's scary, but turning our backs on this opportunity would be scarier still….Limit the pursuit of knowledge? When has that worked? ….It would make more sense to do the opposite. Accelerate the development of technology and open it to more people and educate them on its purpose. Anything less would be Luddism.

And nobody wants to be accused of Luddism. (But is it true that the most promising technologies always present the biggest dangers? Some of history's most promising technologies were paper, clocks, sailing ships, bicycles, phones, and the results of George Washington Carver's research—he developed 118 products using sweet potatoes, 325 products using peanuts, and 75 products using pecans.)

A common argument, perhaps borrowed from advocates of unrestricted gun ownership is that "Science is neutral. You can use it for good or bad purposes" (Nuclear bombs don't kill people—people kill people.) But science is not the same as technology. And people have made decisions to manufacture certain technologies for profit and power, so they are no longer exactly neutral. Modern technologies have an impact on everybody—even on non-technological peoples living in a desert, tundra, or jungle. Not only that, but some potential effects of various technologies could destroy our entire species. So don't we all have a stake in the development and deployment of new technologies?

A professional field called bioethics deals with the constant quandaries that arise because of our growing capacities to affect living matter. However as yet there are no particular professional standards for this field—Bill McKibben calls it "a makeshift profession." Fukuyama is quite pessimistic about bioethicists, a group he describes as "nothing more than sophisticated and sophistic justifiers of whatever it is the scientific community wants to do." In any case bioethics does not deal with the full range of problematic technologies. Not only cloning, but mountain-top removal and the use of depleted uranium weapons also affect living beings. It may be that the nature of this field needs to be clarified as well as greatly expanded in its scope. And whatever a particular bioethicist or panel of bioethicists advises concerning proposed actions should be well-publicized along with their qualifications and a full presentation of their reasoning.

The editors of *Scientific American*, commenting on a well-publicized case in which a single, unemployed mother gave birth to octuplets after *in vitro* fertilization, said that more oversight is needed over new reproductive technologies in the United States. The editors noted that the British established such a regulatory body in 1991, and that it provided "a better framework than reliance on the good faith of physicians who confront an inherent conflict of interest."

Some religious groups oppose certain types of research and biotechnologies such as stem-cell research and cloning. Unfortunately most such opposition is narrowly based on religious doctrines about sexual reproduction and lacks a broad overview of scientific knowledge and

methods, what this technology is attempting and its potential dangers. On the other hand, fueled in part by religious opposition but also using that as justification, an arrogant scientism dismisses any sort of public participation in technological decisions. The more libertarian advocates of science-and-technology promote a scientific laissez-faire: "Anything that can be done should be done." Especially, it may be said, if it is likely to turn a profit. It is all Progress and predestined.

Sir Arthur Eddington, a noted astrophysicist of the 1920s, put it like this: "Science is one thing, wisdom is another. Science is an edged tool, with which men play like children, and cut their own fingers."

What Next?

And so men organized themselves for the sake of their technology as they never had for their principles.

~ Lois McMaster Bujold, *Brothers in Arms* (novel) 1989

The Futurist issue mentioned above included several forecasts about when to expect various technological developments over the next 30 years. For instance, 'designer babies' are predicted for 2012, full machine/human interface in 2025, artificial brain implants in 2030, robots to completely replace humans in the work force in 2035, and teleportation of a human in 2040. One timeline made it clear what drives these technological advances by indicating the market size of each new innovation. Of course this whole vision is based on a global economic system that continues much as it has in the recent past, and the assumed resolution of climate change, unsustainable economic and population growth, resource depletion, and many other problems.

I have a great many reservations about most of these projected developments. They would drastically change humans' conception of themselves, might well create new divisions among humans (the superior designer babies vs. the obsolete model), and raise almost intractable bioethical questions. They suggest a possibility first fictionalized a century ago by E. M. Forster in the story "The Machine Stops" that humans might become so dependent on advanced technology that we lose our native adaptability and make ourselves obsolete.

Bill McKibbens warns in *Enough* (2003) about human germline (genome) genetic engineering. GGE would modify human genes so they could then reproduce themselves through generations—in other words, humans would take over evolution and 'improve the race.' McKibbens says that this "techno-eugenic agenda" is technically quite close in time, only held back by a few ethical guidelines which are under fire by some scientists and politicians. Quoting a researcher from the team that added jellyfish genes to monkey embryos: "Biotechnology is forging way ahead of biology, ethics, [and] commonsense...All of the clinicians wonder what we are doing." Meanwhile, some expect biotech to be the next savior of capitalism. Techno-utopians and big corporations spread the propaganda that these biotechnologies are inevitable. McKibbens says it is a bluff. Although it is likely, GGE is by no means inevitable.

We dare not leave the development of new technologies to the industrial technologists and investors, or to techno-utopians who prefer virtual realities to the world as given. Let us recognize that since all humans have a stake in this process, we also have a right to help guide it. Francis Fukuyama points out that society already controls many kinds of technologies and research. For instance, we have treaties about new biological warfare agents, and laws banning human experimentation without informed consent. So there is precedent for regulation. +++

Jacques-Yves Cousteau saw clearly that decisions could not be left up to the technical experts. He recounts dramatic encounters and events in the development of nuclear power, including atomic technicians who defended nuclear electricity saying, "The waste will be a problem, but we have to proceed because we will later find a way to deal with this." Cousteau says to build a machine before there is a way to control it is simply criminal, and he adds

> The tragedy is that technocrats believe that the public is not able to understand problems, that we…have to be talked to like ignorant children [and] that the technocrats are the only ones who know what to do. But the truth is, it is the technocrats who don't know what they are doing.…The problem is to get rid of the arrogance of technocrats.

Cousteau wrote a document entitled "A Bill of Rights for Future Generations" and the Cousteau Society which he founded has worked tirelessly for its adoption by the world. Article 3 of this Bill of Rights states that it is "the paramount responsibility of each generation to maintain a constantly vigilant and prudential assessment of technological disturbances and modifications adversely affecting life on Earth, the balance of nature, and the evolution of mankind in order to protect the rights of future generations." The full document is available online. +++

We need information, lots of information, about technologies and especially before they hit the market. Radical transparency will help immeasurably, and it cannot come too soon. Our approach should be 'guilty until proven innocent.' The global human health movement predicted by Theresa Brennan could unify people across the globe to act together on this new knowledge. Virtually every member of the human race wants to protect not only their immediate kin but the continuity of the species. Some countries have set up collaborative panels of scientists and citizens to develop policies for science and technology. Denmark, Sweden, Japan, and Germany initiated this process, and there are pilot programs in the United States. +++

The precautionary principle has become a formal principle of German law and of international law. It is enshrined in the new constitution of Ecuador that requires the government to apply precaution in any activities that might lead to destruction of ecosystems, species extinction, or "permanent alteration of the natural cycles." Ecuador's governing document also gives enforceable rights to the natural world, the first nation to do so. +++

In the previous decade, European countries such as Germany, Switzerland, and France, the UK, and the EU held a series of public meetings and dialogues with multi-stakeholder participation concerning the issues of agricultural biotechnology. Similar meetings should be held everywhere, and not only about this technology. +++

McKibbens gives the examples of two historical cultures that decided for their own reasons to forego a new and promising technology. China was more advanced technologically than Europe until about 1400 AD. In the early 15th century, China built a magnificent fleet of ocean-going ships, much greater than those of Europe. Then because of internal politics, the Chinese government decided to scrap these ships and thus forego overseas exploration, trade, and colonization. Instead the Europeans did this, ushering in a turbulent period of wars and plagues in Europe, conquests of other peoples, and slavery. Yet, says McKibbens, Chinese culture did not stagnate after relinquishing its world-power fate, and China had 300 years of social stability.

In the 16th century, European travelers arrived in feudal Japan with guns, which skilled Japanese craftsmen learned quickly how to make, even improving the mechanism. But Samurai warriors, who made up about one-tenth the population, were very attached to their swords, the visible sign of a warrior's honor. Ritual, law, and aesthetics surrounded the swordplay. McKibbens says: "In the end, the samurai simply felt that guns were crude, that any peasant

could use one, that they were destroying the intricate architecture of honor and civility that had marked even the nastiest samurai warfare….Gunfire, by contrast, offered only anonymous slaughter." After 60 years or so with guns, the Japanese gave them up and subsequently they, like the Chinese, also had 300 years of peace, stability, and cultural growth. +++

So there are precedents for stepping back. Human cloning is considered to be a threshold technology which would open the gate to the other new biotechnologies to change our species or to achieve immortality. McKibbens says "Stopping human cloning could serve as a firebreak of sorts, what the ethicist Leon Kass has called 'a golden opportunity to exercise some control over where biology is taking us.'"

What if people all over the world, not just in the developed nations, were given some basic information about genetic engineering and its implications, then polled in a species referendum about whether they want to go ahead? Any technology that deeply affects us all should be decided by all, and not merely 51% but a super-majority or near-consensus. +++

Somehow we must change the prevailing cultural bias toward high technology. We grown-ups need to let go of those toys which are polluting, hazardous to our health, harmful to the planet, and open to abuse by governments and other powerful forces. Instead let us value appropriate technologies that are small or medium-scale, decentralized, more ecologically sustainable, and respectful of human abilities. To prevent or control dangerous technologies, it will be necessary to tame the corporations and otherwise drastically change the global economic system. Since many of the most dangerous technologies are developed by the military, we also need imperial liquidation in the United States and universal disarmament across the globe.

Quite a tall order, isn't it? But enough of us working together—a critical mass—can do it. Technology is not an immutable force.

Chapter 13
Is It Time to Unplug?

The Internet [is] becoming our map and our clock, our printing press and our typewriter, our calculator and our telephone, and our radio and TV.
~Nicholas Carr, "Is Google Making Us Stupid?" *The Atlantic*

First it was television, then the cell phone, next the Internet, and tomorrow it may be the cybernetic human being. Neurologists say that the digital technologies that have become so pervasive in western countries may be changing our brains, but there is disagreement about whether the changes are for better or worse. High tech is 'cool' and extremely profitable. Each invention has its cheering section, the Internet in particular. Various new devices have great positive potential and can improve—have already improved—our lives in countless ways.

Here I want to say that the Internet is a very great boon to a writer. It is magical power to be able to move paragraphs and even chapters around, and I can write so much faster than on a typewriter. I'm constantly learning from the cornucopia of knowledge available online. And that is just the beginning of ways I use the Internet. Even television has its moments, especially on PBS. So I'm not a complete Luddite.

Yet all technologies have mixed social and environmental effects. In celebrating new technology we don't often think about some very negative side-effects and collateral damage from the electronic and digital inventions that now dominate our communications, work lives, and human relations. For a change, let's look at the down-side—the unintended consequences.

The largest but most distant possibility was suggested in the century-old story previously mentioned, "The Machine Stops," about a civilization that became so dependent on an all-encompassing technology that people forgot how to take care of themselves. Now everything from pacemakers to nuclear triggers is under computer control. On at least two occasions, computer glitches have caused runaway computer trading on the stockmarket. In the May 2010 'flash crash' $1 trillion vanished from the stock market for a time. Two years later another glitch eventually cost Knight Capital Group $440 million. We might be hit by cyberwar, or an unprecedented series of solar flares, or who knows what wild card disruption of the Internet, but we need to have a back-up plan.

An older invention, television has greatly changed our political system. In all the discussion and legislation about campaign finance reform, virtually nobody proposes an outright ban on television campaign ads. Yet these ads constitute the largest expense for candidates and have become necessary for their election. Expensive television ads may be the largest single factor contributing to the current distortion and corruption of our politics. Negative ads do sway voters. Smear campaigns may actually decide elections based on false issues and misleading information. Negative campaigning contributes to ideological polarization, oversimplified issues, and fallacious reasoning. Negative ads also disgust citizens so much that they reduce turnout.

Simon Wood points out that over one-third of each presidential term is taken up by "single-minded and aggressive attention at the cost of actual news." The 2011-2012 primary season has been exceptionally unenlightening—and as I write, the actual campaign has not yet begun. Of course it is all terrifically expensive.

Paid political TV advertising is a dramatic aspect of the U.S. system, the major form of communication between candidates and public. Yet it is fairly unusual. In some democracies such as France political advertising on television is heavily restricted. It is banned entirely in

many other countries including Norway, Germany, UK, South Africa, Brazil, Belgium, Switzerland, Chile, Sweden, Ireland, and the Philippines. The justification for such bans is that since rich or well-established parties would be able to afford significantly more advertising time than new or minority parties, paid political advertising is considered a discriminatory practice.

On September 15, 2011, voters in Denmark elected a new parliament and prime minister. According to R. Spencer Oliver in *The Hill*, "The campaign lasted all of three weeks. There were no political ads on television. And participation was estimated to be above 80 percent. Compared to the United States—the land of the permanent campaign—the parliamentary democracy of Denmark offers us a glimpse of what elections could be."

The need to raise funds for ads keeps many legislators away from the halls of Congress where they should be debating and listening to each other, crafting legislation and studying the legislation proposed by others. Instead they are off speaking at $1,000-a-plate fund-raising dinners, pandering to their base and wooing big donors. It is almost inevitable that 'special interests' would demand a quid pro quo for the money they donate. By the term 'special interests' I mean those with a financial stake in legislation.

Some veteran members of Congress have retired rather than stay a part of this system. But very few have spoken out with the intensity this subject deserves. (Of course, if they did they could not expect television news to carry their criticism!) Television networks make a lot of profit from political ads. The networks have become king-makers, and any current politician who attacked the source of his revenue would find his (or her) political career ruined. Those who could and hopefully will speak out to end this practice are career politicians who are billionaires in their own right, those who have retired or are retiring, and reform candidates who are willing to be one-term legislators before they return to their previous occupation.

The Hot Media

We are overexposed to a culture that is dangerous. In the early 1960s Newton Minow said television was a "vast wasteland." Now it's a vast minefield.
~Dick Meyer, *Why We Hate Us*

The mainstream media, particularly television and talk radio, is very much implicated in current problems of public ignorance and misinformation. Talk radio produces a steady stream of ideology, misstatements, and abusive language. Our daily diet of news and drama on television provides constant distraction, models of shallow, self-centered people whether celebrities or fictional characters, and compelling depictions of 'the end justifies the means' in dramas such as "24." As for news, veteran journalist Dick Meyer says "argutainment news is crowding out journalism….Much of what we hate in society today we encounter *only* through media."

For several reasons, I strongly recommend against getting one's news solely from television, which is the way most Americans currently get it. TV news is too 'hot' in the Marshall McLuhan sense that the nature of the medium tends to bypass critical thinking. Television is slanted toward the superficial and sensational, goes by too fast, and does not allow for checking back or marginal notes. Ownership of broadcast media is more concentrated than print media, allowing an even narrower bias toward the corporate viewpoint. Television networks have a history of squelching their own investigative reporters in order to placate advertisers.

Aside from actual content, television viewing has several negative psychological and physiological effects, one of which is the possible atrophy of peripheral vision mentioned earlier. These effects are still not widely known although Jerry Mander, a former advertising man, wrote

compellingly about them 30 years ago *in Four Arguments for the Elimination of Television*. It would also be a good idea for all of us but especially children to watch much less television in general. There are hints that it may be contributing to increases in autism and attention deficit disorder. As Meyer advises, "Worship the off button."

One psychological effect of television viewing even for adults is the confusion of screen images for reality. Meyer cites recent research by scholars Byron Reeves and Clifford Nass who conclude that our human brains cannot evolve rapidly enough to deal with 20th and 21st century technology and "People can't always overcome the powerful assumption that mediated presentations are actual people and objects." The irrational influence of artificial images does not even require a three-dimensional virtual reality, according to one experiment. Researchers placed a picture of either flowers or a pair of eyes next to the suggested price list in a University of Newcastle lounge where paying for coffee was optional. Coffee drinkers donated almost three times more money when the eyes were posted. The *Smithsonian* remarks "Apparently even a 2-D witness was enough to deter some potential coffee-kitty cheapskates." How much more powerful, then, is a constant diet of simulations in 3-D, with movement and sound.

Our evolution did not provide us with any way to distinguish between the real world and an imitation world, because up until quite recently there was no need. Meyer says the individual's constant attempt to separate the real from the fake is taxing our cognitive faculties and draining our spirits. In self-defense, many people adopt an ironic, cynical view. They come to distrust most individuals and social institutions, and this attitude is seen as both realistic and 'cool.' But cynicism does not provide a good base for community fellowship or action.

Gen Net

Our high-tech revolution has plunged us into a state of continuous partial attention.
~Gary Small, M.D. and Gigi Vorgan, *iBrain*, 2008

With Smart phones students—and others—can carry what is essentially a personal computer in their pocket. There's a kind of total immersion in the new technologies. Educator Tony Wagner describes people under age 30 who have grown up with digital technology as the Net Generation. According to a *Frontline* documentary, U.S. young people currently spend over 50 hours a week with digital media—that's more hours than one usually spends at a full-time job. "Digital Nation" discussed the growing problem of youthful addiction to computer games, first evident in South Korea, where special clinics and camps treat game-players who ruin their health and lose social ties while sitting at the keyboard day and night. More often, young people spend a lot of time social networking. The kids think of themselves as multi-taskers. Others see them as trying to cope with information overload by a new kind of distracted attention.

Many scientists, academics, and social critics are concerned about effects of digital technology on the human brain and on thinking habits. Mark Bauerlein, a college English professor, says as a result of our reliance on screens and gadgets we retain "juvenile mental habits" and have suffered a collective loss of context and history. Neurologist Gary Small says that Digital Natives have developed actual changes in neural circuitry over the course of one generation, that this "evolutionary brain process…may represent one of the most unexpected yet pivotal advances in human history." But is it an advance, a threat, or simply a change?

Some observers find these neural changes to be only a generation gap—benign or even a sign of progress—another version of "Our children are smarter than we are." For instance, economist

Tyler Cowen says that since the Internet has made it unnecessary to store a lot of general knowledge, we can specialize in the areas we're most interested in. In other words, we should continue in the same direction of increased specialization and abstraction that we have been going in for the last several centuries.

But maybe it is time for a pendulum swing back. Anthropologist Jared Diamond, who spent 33 years working with tribal people in New Guinea, says: "Modern 'Stone Age' peoples are on the average probably more intelligent, not less intelligent, than industrialized peoples." He suspects that one evolutionary reason is that in New Guinea people had to learn to escape murder, chronic tribal warfare, accidents, and frequent scarcity of food, so that "Natural selection promoting genes for intelligence has probably been far more ruthless in New Guinea." Diamond also notes that New Guinea children, instead of enjoying passive entertainment, spend all their time doing things and thus they escape "the devastating developmental disadvantages under which most children in industrialized societies grow up."

Social Media—Global Village or Dystopia?

Karl Marx suggested that in the capitalist age, we began to treat one another as commodities. "The Social Network" [2010 film about Mark Zuckerberg, founder of Facebook] *suggests that we now treat one another as packets of information.*
~David Denby, *New Yorker,* October 4, 2010

Eight years after Facebook began it has 800 million users across the world. Wikipedia notes "If Facebook were a country it would be the world's 3rd largest." Here's another factoid: Text messaging via cell phones first became popular during the 1990s and early 2000s in Europe. By 2009, 1.5 trillion messages a year were texted in the United States. Social media has overtaken pornography as the #1 activity on the web. Let us assume that's an improvement.

The new digital social media—Facebook, YouTube, tweets, texting, instant messaging, and the like—have the power to spark revolutions such as the "Arab Spring" and also to incite mobs that burn embassies and kill their staff.

Andrew Blum says "We have staked the future of democracy and freedom in the quicksand of Facebook and YouTube." By removing the filter, we are open to all the unintended consequences of viral media.

Social media have the potential to increase impersonal and superficial human relations. Some compare the social web to high-school cliques. Social media have taken over the actual schools—educators say that texting, in particular, is a huge educational distraction and greatly increases teasing and bullying. In Ireland, text messaging was blamed as a major cause of teenage illiteracy. Texting is also implicated in many traffic accidents.

Eric Schiller describes Twitter as

… a social media site where users can post short, 140 character messages known as tweets....Twitter itself functions as a hotbed for random, mostly useless information which distracts and creates compulsive behavior in the human mind.... Because twitter is so easy to join and start posting information, it has become a hotbed for people who have deluded themselves into believing they are experts.

Psychologists in a study at Edinburgh Napier University found that Facebook adds stress to the lives of users. Critics also have serious concerns about the use of Facebook as a means of

surveillance and data mining, especially since Timeline became mandatory. A large minority would like to go back to the 'old' Facebook.

In an essay titled "Social Media: Moving toward a Brave New World?" Schiller speaks of the "unholy trinity" of social media, marketing, and the positive thinking movement which dominates the Internet, while lacking real substance. He says "This surplus of distraction and the compulsive nature of human interaction with social media compares very well with the fears that Huxley portrayed in *A Brave New World* about a society tranquilized by pure pleasure."

Schiller's solution to "this hidden authoritarian censorship…. is to build a continual cycle of criticism within the social media environment." He doesn't detail how this is to be done.

Please Bring Back Childhood

By means of make-believe, children structure a world for themselves in which they have the power to act and to affect people and events. [This activity] becomes increasingly important to their success as social creatures.
~Marie Winn, *The Plug-in Drug*, 2002

I am thankful to have had an old-fashioned childhood when children were expected to play instead of preparing to compete in the global market, back when the notion of eliminating recess would have sounded crazy. By my children's time, TV was still a novelty, not yet an epidemic, but children played less outside. Today it is a shock to discover that babies and toddlers under two years old are regular TV viewers, despite warnings by pediatricians. Drawbacks to watching television are magnified for children and especially the youngest ones. Marie Winn says that children under five are among the heaviest users of television. A Nielsen Report found those aged two to five spent an average 21.8 hours weekly, a full quarter of their waking hours.

Winn believes that concern about how much violence children see on television is not as important as the total number of hours they are watching it and the other things they are *not* doing—playing, conversing with other family members, reading, exercising their bodies, manipulating objects, and making things. She quotes sociologist Urie Bronfenbrenner: "Turning on the television set can turn off the process that transforms children into people." Winn says TV stunts children's emotional and intellectual growth, replaces their own fantasies with others manufactured by adults, and helps perpetuate dependency past the age when children are ready to initiate their own activities.

Now there are yet more technologies. Besides the 2 ¾ hours a day that the average child watches television, there is additional screen time of ½ hour to 45 minutes watching videos and 20 minutes of playing computer and video games. So much screen time severely constricts the time left for imaginative and social play. Early childhood teachers noticed that after TV became widespread, children engaged in less dramatic play. They found that many children tuned out very quickly and expected the teacher to do all the initiating of activities. Winn says the reduced time for social play—which normally begins around age three or four—may be contributing to an increase in children's aggressive behavior.

There are several ways that excessive screen time affects a child's cognition, according to Winn. First, it limits vocabulary. Studies show that the number of words an infant hears each day can predict, more than any other factor, later school success, intelligence (as measured by tests), and social competence. But to be effective, these words need to come from another human being in relationship with the baby, not from a machine source such as radio or television.

Second, infants and young children think nonverbally, like animals, until they develop language, and even then the two forms of thinking function side by side through our lives. These nonverbal and verbal forms are related to 'right brain' and 'left-brain' modes of thinking, and we all need both of them working together. However, Winn says television changes this process:

> For young children in their formative, language-learning years, any extended regression into nonverbal mental functioning such as the television experience offers is a potential setback….As they relax, year after year, a pattern emphasizing nonverbal cognition becomes established.

A third cognitive effect has directly to do with reading. Winn notes that while reading, one's mind transforms abstract symbols into sounds and then into words learned in the spoken language. Readers also create images based on their own experiences and needs. Television, on the other hand, imposes manufactured images that do not satisfy the viewer's individual needs. The television experience appears to harm the viewer's ability to make images. Reading specialists describe a growing *aliteracy* among schoolchildren in the United States. These children know *how* to read but they find it hard to visualize what they read and thus to understand or enjoy it. They do not read for pleasure.

A fourth effect has to do with an advanced reading skill known as 'inferential reasoning.' This is the ability to draw conclusions and create new ideas from what one reads. The U.S. government's National Assessment of Educational Progress (NAEP) found it had declined significantly. Without inferential reasoning, reading is just a mechanical exercise.

From the mid-1960s until the early 1980s verbal scores on SAT tests steadily declined and have stayed steady since. Educational experts decided that the reason for this was that more students from minority and lower-income backgrounds were taking the test. But Winn says the evidence supports television as one of the causes, if not the major one. As TV ownership rose by leaps and bounds through the 1950s and 1960s, so larger numbers of childhood TV watchers took their SATs in the 1960s and 1970s. Winn suggests that SAT scores have stayed stable since television-ownership reached the saturation point.

It is not an exaggeration to warn that by gluing our children to electronic screens from babyhood on up we may raise generations of intellectual zombies. Fortunately, Winn gives several ideas for how to wean children and the family away from television addiction. She says many parents think that TV is bad for family life but are afraid to get rid of the sets lest their children become social misfits. (Others, of course, are addicted themselves.) Families that make rules about TV viewing are in better shape than those that don't, and rules are easier to establish after a period without television such as a vacation trip. Some suggested family rules are: +++

> No TV on school days (the Obama familyl reportedly follows this rule).
> No TV at dinnertime or bedtime—read a story at bedtime instead
> Impose a time limit of one-hour-a-day.
> No solitary TV-viewing.
> Allow fewer or no 'regular' programs that the child always watches.
> No TV in children's rooms. (Although virtually all experts emphasize this last rule, over half of children two to 18 currently have a set in their rooms.)

Winn says a rich social and family life may serve as a natural limit to television watching. Other strategies include reducing the number of sets to one small-screen, cancelling the cable subscription, or keeping the (one and only) set in the basement or a closet so it takes extra effort

to view. Since 1994, an organization called the TV-Turnoff Network holds a national TV-Turnoff week every year in April. From a week without television, people realize how much the machine affects their lives, and family rules are easier to establish. After the TV-Turnoff week, some families keep the set off indefinitely. +++

Electronic Games: Computer/video games are undoubtedly helpful for developing certain skills. Some role-playing games become international social networks, even symbols of freedom. When Chinese bureaucrats took the fantasy game *World of Warcraft* offline in 2009, tens of thousands of Chinese players filed complaints and hounded an "Internet addiction" expert who defended the move. As we discuss later, computer games have the potential to help us solve planetary problems and to envision the future.

But here and now, we have a major problem with content, especially considering how many young people are playing. The interactive nature of the games allows greater identification with the action than is possible in other media. For instance the immensely popular Grand Theft Auto series allows players to imitate the sort of ethics displayed in ninth century Viking raids. Modern day Scandinavians have advanced a long way past that model—do we want to resurrect it?

One problem is that younger kids always seem to be using games ostensibly designed for adolescents or adults. This prematurity happens with all sorts of media, even books. Many well-meaning people do not respect children's developmental stages. Adults assume fairy tales are for children, but many preschool children are not psychologically ready for disturbing versions by the brothers Grimm or melancholy tales by Hans Christian Andersen. If very young children seek out violent tales or games, it may be that they have been desensitized by violent media.

And, of course, electronic games are yet more screens taking time and attention away from interactions with family, friends, and nature.

The Internet

A lot of people say the invention of the internet was like the invention of fire, but I'm going further – I think actually what is happening right now might be comparable with the invention of language.
Kevin Kelly, co-founder and editor of *Wired* Magazine

By now at least three-fourths of U.S. adults use the Internet. Our economy, our government, our social life are all inextricably tied into this technology, and nothing short of an electricity blackout or cyberwar can stop it. The Internet is a treasury of information (and misinformation), it allows like-minded people to find each other, helps friends and families keep in touch, and can quickly set up new grassroots organizations. There is quite a downside, though. Lili Ladaga says "For every miracle of convenience that the Internet brings into our lives, there is a corresponding nightmare." First of all, the Internet ate the newspaper. It has enabled identity theft, child molestation, stalking, harassment and bullying, libel, fraud, personal deception, and the spread of pornography, misinformation, smear campaigns, and conspiracy theories. And it has introduced confusion into how we relate to each other, given that face-to-face interactions involve more nonverbal communication than they do words (at a ratio of at least two to one).

Techno-utopians such as Kevin Kelly envision many positive changes in human life from the advent of the Internet. Pew surveyed leading Internet figures about what the Internet will be like in 2020. They agreed that transparency will increase but say this will not necessarily increase personal integrity or social tolerance. Ladaga adds: "The divisions between personal time and

work time and between physical and virtual reality will be further erased for everyone who is connected, and the *results will be mixed in their impact on basic social relations*" [my italics].

The Pentagon and other militaries plan for the possibility (and strategy) of cyber-war. U.S. Defense Secretary Leon Panetta warned about the possibility of a "cyber-Pearl Harbor," and argued for new legislation to protect critical facilities such as power plants. Of course the U.S. is also involved in cyber-attacks against adversaries such as Iran.

Though not quite cyber-war, independent rings of hackers may operate from anywhere and attack anywhere, whether for criminal gain, ideological reasons, or plain vandalism. One very sophisticated attack that began in late 2008 but was not detected until January 2010 infected computers in about 2,500 health and technology companies in virtually every country of the world. This "Kneber bot," run from Eastern Europe, demonstrated that industries in the private sector, no matter how sophisticated their own defenses, are unable to protect themselves from certain kinds of threats. This particular vulnerability in a way symbolizes the vulnerability of humankind's great degree of specialization and dependence on technology.

E-Waste is the unfortunate companion to widespread use and constant change in electronic technology. Each year the USA discards 30 million computers and Europeans dispose of 100 million phones. The EPA reports that in 2007 discarded computers, printers, other computer peripherals, and cell phones amounted to two and a quarter million tons—just in the United States. Only about one-fifth were recycled. Most of the rest went into landfills, where chemicals could leach into the groundwater, and some were incinerated. Almost every electrical product contains lead, and other toxic components include cadmium, mercury, arsenic, and PBDEs.

Some valuable metals such as gold, platinum, and copper can be extracted, but there are better and worse—very much worse—ways to recycle. Many tons of e-waste are exported, legally or illegally, to West Africa, India, Malaysia, and China. A study by a coalition of activists found that 50 to 80% of e-waste collected for recycling in the United States is exported to developing nations such as China, India and Pakistan. The problem is that tens of thousands of people including many children are using primitive recycling technologies that are extremely polluting to their bioregions and the Ocean, and highly dangerous to their own health. Toxic chemicals may also enter the food chain.

The Basel Convention, a two-decade-old global treaty among 172 countries, regulates international movements of hazardous and toxic wastes. The United States, along with Haiti and Afghanistan, has signed the treaty but not yet ratified it. A coalition of nations and NGOs passed the more restrictive Basel Ban Amendment a few years later. The Ban prohibits the 29 wealthiest countries (OECD) from sending their hazardous and toxic wastes to developing countries.

The Basel Ban was strongly opposed by the United States, Australia, Germany, Canada, Japan, the United Kingdom, and South Korea, as well as a powerful industry lobby. Although 73 countries have so far ratified the ban, it is still not in effect because of obfuscating legal interpretations about how many ratifications are needed.

A recent study showed the average U.S. consumer was holding on to some 2.8 pieces of broken or obsolete electronics equipment, so how does one recycle it responsibly? In the United States, the EPA has created no regulations about e-waste. In early 2009, industry trade groups created a recycling standard called Responsible Recycling (R2). A few months later the Basel Action Network (BAN) together with a number of environmental groups went beyond R2 by creating e-Steward certification that prohibits export of waste to developing countries. Beyond making sure your local recycler is e-

Steward certified, what else? First, the out-of-step United States should ratify the 22-year-old Basel Convention. The second action regards the Basel Ban on exporting toxic wastes: citizens of wealthy, non-ratifying countries need to pressure their countries to ratify the Ban.

Third, the problem is much larger than only OECD exports: a study in *Environmental Science & Technology* projects that by 2016-2018, developing countries will be discarding more computer e-waste than developed countries. The Ban should be reframed to include non-OECD nations that already produce significant amounts of hazardous and toxic waste and might be tempted to export it, such as China, Russia, Brazil, and India.

Miniaturization, cloud computing, and other new technologies may help reduce waste somewhat, but ultimately the makers of computers, cell phones, and other electronic devices need to design and manufacture them in such a way that they do not produce all this waste. Do we really need fancier bells and whistles every year, or does that occur in order to make somebody richer, and who-cares-about-toxic-wastes? This past week Walmart shareholders were holding their annual meeting in, as it happens, my town. Faith leaders in all 50 states sent an open letter to the company on "the Stewardship of Electronic Waste" saying:

> Sustainability in the area of electronics means real changes in the ways that electronics are made, sold, disposed of and recycled. Walmart is well-positioned to champion greener, more recyclable designs, and an electronics take-back program can further ensure the development of "cradle to cradle" production processes—turning what was formerly "waste" into feedstock for the next generation of products.

The fact remains that this is a species problem, and a big one. We must consider the problem of e-waste as a whole.

More Positive/Negative: Electronic devices have countless positive uses, no doubt about it. General knowledge grows by leaps and bounds with resources such as Wikipedia. Even the ubiquitous cell phones causing car accidents must be balanced against the fact that cells have helped save lives during disasters and emergencies, have documented injustices, and have brought the Internet to many in the Third World. I myself am semi-addicted to the Internet and the word-processor, without which I could hardly have written this book and its predecessors.

On the negative side of technology, especially in terms of big flat-panel TVs, is that our screens and other electronics use a lot of electricity. In California, TVs went from using three percent of household electricity in 2000 to eight percent in 2009, and rising. The big screens use almost as much as refrigerators. Throw in the laptops, game consoles, music players and cell phones, and the electronics can devour 15% of household power, according to the International Energy Agency. This is at a time when we need to use *less* electricity and to stop burning coal. Obviously, electronic media are not going away. But I propose the following immediacies: +++

> Ban political campaign advertising on television.

> Keep preschool children away from television and computer screens. Jonathan Liu, writing in *Wired* magazine about all the hot electronic gadgets and games available for Christmas giving, notes that the five all-time greatest children's toys are free: Stick, box, string, cardboard tube and dirt. As the old saying goes, "A good toy is 90 percent child and 10 percent toy."

Don't let TV brainwash children by letting them watch a lot of it before they are developmentally ready to distinguish facts from fantasy, or to resist advertising, or in fact to resist its hypnotic effect that keeps them from playing, reading, and social interactions.

Let schools emphasize nature and direct experiences instead of technology.

Cut down on electronic screen time for everybody in the family. Try a TV-Turnoff Week. Go on more picnics and camp-outs. Keep the TV set in a closet.

Think twice before buying more electronic gadgetry for self or children. Recycle e-waste responsibly.

Microwave technology is associated with electronics and is more of the taken-for-granted tech in the background. Microwaves are electromagnetic waves with frequencies between 0.3 GHz and 300 GHz, frequencies quite a bit higher than those used for radio broadcasting. Microwave technology has developed since World War II, especially since the 1970s. Radar uses microwaves, and the microwave oven is such a common household appliance that many call it simply a 'microwave' for short.

Microwaves/radar occurs in a number of contexts that people seldom think about. Many communication systems and cellular networks transmit at microwave frequencies. Across the United States there are up to 150 sites with Doppler Weather Radar, a similar number of radar systems for air traffic control at airports, aircraft that have their own onboard radar, and hundreds of satellites. Navigation systems such as GPS use microwaves. In the home besides microwave ovens there are baby monitors that operate on microwave frequencies, and cell phones are everywhere. DECT cordless phones and Bluetooth devices also use these frequencies.

In 1997 a scientist named Vic Hayes observed the official launch of his invention known as Wi-Fi that could link up computers using high-frequency microwave radio waves so that they could share information. It was first designed to connect together cash-registers at checkouts but ten years later there were an estimated 53 million Wi-Fi enabled devices in Europe alone. The UK was installing them in schools. Yet Wi-Fi had never had to undergo any sort of test or safety check. Some UK parents were sufficiently concerned that they withdrew their children from school to educate them at home.

An American public health scientist, George Louis Carlo, headed a six year, multi-million-dollar research program funded by the cellular phone industry to study possible health effects of cellular phones. He said later that while there was no definitive proof, the study had raised "red flags of concern among public health people." Dr. Carlo went on to coauthor *Cell Phones: Invisible Hazards in the Wireless Age*, which accused "corporate greed and masterful PR spin" of blocking his efforts to follow up the evidence of health risks from cell phones. He has since concluded that electromagnetic radiation from these and other devices contributes to autism, brain cancer, ADD, and Alzheimer's, and causes colony collapse disorder in bees.

Other studies are inconclusive, and some scientists say that research must continue for more decades to prove any links. However some research shows a consistent pattern between specific brain tumors and habitual cellular phone use. Some neurosurgeons and cancer experts recommend precautions such as using headsets and speakerphone features, keeping cell phones as far away from the body as possible, and buying devices with lower radiation. Some models emit more than 14 times as much radiation as others.

Carlo founded the Safe Wireless Initiative, which has now collected a large database of people who have symptoms or illnesses related to exposure to electromagnetic radiation, a condition called Electro-Sensitivity (ES). A survey used by this organization in the UK and Ireland asked about 32 possible symptoms, several of which relate to mental functioning such as "inability to focus…learning difficulties…memory loss." The questionnaire asked about personal or occupational use of PDAs, laptop computers, GPS, power tools, security body scanners, supermarket or library scanners, CT scans, MRI, 2-way or CB radio, microwave oven, electric blankets, hairdryers, electric shavers, and wireless game stations, as well as mobile phones. Other questions asked about working with or living near a mobile tower or mast, high-tension power lines, radar devices, electrical transformers, electrical sub-station, or an airport. This long list suggests the omnipresence in our lives of technology using electromagnetic frequencies, most of it since World War II. The *Ecologist* reports Pentagon plans for experiments that would beam power from solar satellites to Earth in the form of microwaves, to supply power to troops in the field.

Several bloggers and posters who are scientifically-literate but not science authorities have discussed whether radar systems and other microwave technology could be major contributors to global warming. Cell phone use has grown exponentially—a recent newspaper article says that 60% of the world's people now use cell phones, two-thirds of them in developing countries, where they are not only convenient but fill many needs. Some people see a 20-year correlation between cell phone use and accelerating global warming. Of course, correlation is not causation, but the microwave connection is certainly one hypothesis to investigate. Apparently no studies have been done.

Part Four: Healing People

Chapter 14
Trouble Spots and Troubled People

We must all learn to live together as brothers or we will all perish together as fools.
~ Martin Luther King Jr.

Troublespots are areas of the world where people have a history of fighting their neighbors or each other, where one unstable government succeeds another. We tend to see these people as somebody else far away, locked into their separate national karmas. Also we see them in headlines, without much history or context. But the species is one, not divided by lines on a map. The history or context of these places often involves policies and past interventions by other countries including the United States or its allies. Sometimes their troubles relate to geographical constraints that apply in varying degrees to all of us wherever we live. Here are just a few thoughts on these complex, tragic, and dangerous situations.

Jared Diamond's book *Collapse* presents two maps next to each other of "Political Troublespots" and "Environmental Troublespots"—they are virtually the same, and include the nations of Afghanistan, Bangladesh, Burundi, Haiti, Indonesia, Iraq, Madagascar, Mongolia, Nepal, Philippines, Rwanda, Solomon Islands, and Somalia. This should serve to remind us that problems such as deforestation, insufficient arable land or water resources for the population, storms and droughts due to climate change, and pollution (including pollution and destruction from past wars) are very often intimately connected with current political unrest and civil wars.

The Failed States Index site from *Foreign Policy* magazine shows a number of countries that their experts judge to be failing in various ways, from demographic pressures, economic decline, outside intervention, and other problems. Some nations depicted on the map as "critical" are Afghanistan, Burma, Haiti, Somalia, and Zimbabwe, while the majority of nations appear to be "in danger" including Russia, India, and China. North America (above the Rio Grande), Argentina/Chile, Japan, and most of Europe are shown as "stable," but the "most stable" countries/regions are Australia, Ireland, New Zealand, Scandinavia, and Switzerland.

One may note that the countries deemed most stable of all are relatively small in population, have mainly European ancestry, and lack large indigenous or minority populations. The Failed States Index focuses on the current political and economic situation more than on environment or future sustainability. This determination of the relative state of health or stability of nations, while useful in many ways, reflects the outlook of the American foreign policy establishment rather than a long-range or species view such as that of Jared Diamond, or the designers of the Happy Planet Index.

A few of the world's troublespots although relatively small in themselves threaten to ignite much larger conflagrations, even nuclear exchanges. For instance, Kashmir has approximately eight million inhabitants—about the size of London—and is disputed between India and Pakistan, both of which are nuclear-armed and were saber-rattling a few years ago.

Another perennial worry is North Korea whose rulers, fathers and sons, tend to be mysterious, authoritarian figures, the subject of a personality cult. North Korea, with the fourth largest standing army in the world, is trying to develop nuclear missile technology to threaten its neighbors, while its own people don't have enough to eat.

In the Mideast, Israel and its occupied territories comprise a 'super wicked problem.' Such problems have three traits: 1) Time is running out; 2) There is no central authority over all parties; 3) Those who are seeking to solve the problem are also causing it [including the United States and other Western powers]. Again, we speak of relatively small countries and populations. Israel is almost eight million people. Another four million people dwell in the West Bank and Gaza. Together, Israel and its territories are the size of greater Tokyo, or Pennsylvania.

Gaza is predicted to become unlivable by the end of this decade, when its young population of 1.6 million is projected to grow to 2.1 million. It could run out of safe drinking water well before 2020. Electric power, homes, schools—all are running short. The Israeli blockade ostensibly designed to prevent weapons reaching Hamas, a militant anti-Israel group, has isolated and impoverished the entire population of Gaza. About one-third of Gazans are unemployed. They are heavily dependent on outside aid and illegal smuggling to survive.

Israel's current Prime Minister, Benjamin Netanyahu, backs up hard-line policies with an aggressive style. Some in his own country perceive him as meddling in U.S. politics in an election year. Netanyahu is now caught in a legal trap: right-wing elements of his government insist that there is no occupation, that the occupied territories are actually part of Israel—this despite 45 years of international and Israeli legal opinion recognizing Israel as an occupying power. The occupation is illegal under international law for several reasons, summarized by a legal site: "A military occupation established around goals of annexation of the occupied lands and exploitation of the people who live there, rationalized by religious dogma, and codified in the occupier's own laws, is clearly an illegal occupation."

Led by an expansionist government, surrounded by present and former enemies, Israel has an estimated 75 to 400 nuclear weapons, although it has never officially admitted to having any.

Meanwhile, Iran is developing civilian nuclear technology that, like nuclear tech in general, could be turned into military production of nuclear bombs. Iran's nuclear enrichment has been delayed by at least one advanced computer worm, Stuxnet, probably the work of U.S. and Israeli computer experts. Expert opinion is divided on whether Iran is actually trying to produce bombs, which could be ready by 2014 or 2015. In July, 2012, Iran test-fired several missiles which had the capability of reaching Israel and Europe.

At this time, Netanyahu is threatening to bomb Iran's nuclear enrichment facilities and pressuring the United States to join this action. But the U.S. military is exhausted from a decade of wars. If the United States became involved, it would likely end up invading and occupying Iran, a much larger and more advanced country than Iraq was in 2003. Moderate Iranians would rally around their government. Rockets would rain down on Israel. Islamic extremists would plan terrorist attacks around the world. Iran is the world's fourth largest oil producer. An oil crisis would sink the world economy, which is already ailing.

Wars don't go by a blueprint. Limited wars do not stay limited. Iran has allies, not only some in the Arab world but also nuclear-armed Pakistan. From any perspective it is a dangerous game for Israel to risk starting a war with Iran. If Israel tried to use its own nuclear weapons, it would devastate itself as well as most of the Middle East. The reasonable solution is to turn the Mideast into a nuclear-weapons-free zone. Iran's Ayatollah Khamenei, Egypt's President Morsi, and 64% of Israelis favor this idea. +++

Unfortunately, Israel's government won't discuss disarmament or allow UN inspections, and is one of only four nations that are not members of the Nuclear Non-Proliferation Treaty. (The others are India, Pakistan, and North Korea.)

The world is held nuclear hostage to these local situations that throb like a toothache or a boil. Surely the planet's seven billion citizens could put their collective head together and work out solutions that the belligerent parties (and their enablers) could accept. Perhaps the planet's population should *insist* that the belligerent parties resolve their conflicts before violence erupts and destroys half the human race including the saber-rattlers. We desperately need new thinking.

In one example, a retired Iranian energy engineer, Mahmood Khaghani, suggests a new "energy diplomacy"—negotiations between Iran and the P5+1 (UN Security Council permanent members plus Germany) aimed at cooperation in the technologies of renewable energy and carbon energy savings. If Iran can meet its energy needs without nuclear reactors, the locus for concern about nuclear weapons disappears. +++

We will shortly discuss some other proposed solutions for the Mideast that have been overlooked in the ideological either/ors.

Keep an Open Mind: It is most important to keep a clear head about the world's conflicts. Here in the United States people might keep five things in mind:

1. U.S. media give an incomplete, biased picture based ultimately on geostrategic aims of U.S. policy makers. We need history and other context in order to understand what is going on.

2. There are other perspectives than that of the United States. Try for a species viewpoint.

3. Solutions to conflicts are commonly presented in military terms, but there are almost always better ones.

4. The UN was set up to keep the peace. We could strengthen its peacekeeping abilities instead of trying to replace it with the military organization NATO, which the USA dominates.

5. We can all consciously resist pressures to polarize, personalize, and dramatize conflicts, to frame them as Western gunfights between the sheriff and the desperado, turn them into tests of manhood, or otherwise distort them for the sake of a good story and justification for violence.

Abstract words and phrases often act to stop thought. Consider the elastic concept of 'national sovereignty.' It is respected as an almost sacred thing even when the nation in question was cobbled together over a century ago, say by British colonial rulers who drew a line on a map (the Durand line) that left some Pashtuns in Afghanistan and some in Pakistan, or divided the Kurds between Turkey, Iraq, and Iran. At the same time, the United States in its turn at being a Great Power freely disregards the national sovereignty of weaker nations by invasion, covert interference with their governments, and by setting up permanent bases on their land with Status of Forces Agreements.

The great violinist Sir Yehudi Menuhin said that the ethnic wars in Yugoslavia "represent the lingering conceptual prisons of 19th century thought, such as the concept of 'sovereign national states.'" He recommended (in 1992) that the European Community recognize the various cultures of former Yugoslavia as distinct entities and adopt them as wards, but not as sovereign nations. Of course this advice was disregarded and a good deal of bloodshed followed.

R2P: The Geneva Conventions refer only to wartime, not to democide by a nation's own government. A recent concept in international relations is the *responsibility to protect* (R2P) regarding a nation's responsibility to protect their own people, and the international community's responsibility should a nation fail to prevent or stop mass killing or genocide within its borders (or be itself guilty of the killing). The controversial question is: when is outside humanitarian intervention justified? The UN Security Council adopted a document produced by a 2005 World Summit which says in part:

> The international community, through the United Nations, has the responsibility to use appropriate diplomatic, humanitarian and other peaceful means…to help protect populations from genocide, war crimes, ethnic cleansing and crimes against humanity….We also intend to commit ourselves…to helping States build capacity to protect their populations from genocide, war crimes, ethnic cleansing and crimes against humanity and to assisting those which are under stress before crises and conflicts break out.

UN representatives from several countries—Argentina, Australia, Canada, Ghana, Mali, Rwanda, Sweden, Switzerland, and the UK—have supported R2P, but there are several criticisms of this concept. Some critics, particularly within developing nations, fear that R2P would be abused by the most powerful states and become a tool of imperialism. Others note that it only addresses violent events, not famines or widespread, crushing poverty.

Some previous events that might have been part of R2P concern are the Kurdish genocide in Iraq in 1987, Rwandan Genocide in 1994, and the Sudanese government's denial of food to the people of the Nuba Mountains in the late 1980s and early 1990s.

However development of the concept of R2P has not prevented several humanitarian catastrophes since: in Darfur; in Syria particularly the massacre of civilians in the area of Homs; and another attempt in 2011-2012 by the Sudanese government to starve and bomb the people of the Nuba Mountains.

Islamic Literacy, Israel and Palestinians

Roughly 1 in 5 of the world's population is Muslim. Yet for all the talk about a global society with the telecommunication revolution bringing knowledge to the masses, what most westerners from Christian backgrounds know about Islam can be written on the back of a small postage stamp.
~Paul Bowman, "Diversity in Islam for Absolute Beginners"

Two Bush administrations found it necessary to manufacture public support for wars in the Middle East: the Gulf war and the later invasion and occupation of Iraq. The Bushes did not explicitly mention U.S. strategic aims regarding Middle Eastern oil, natural gas fields, and pipeline routes, or political dominance in regions near potential competitors such as Russia. This propaganda need has led to widespread U.S. ideological prejudice against Islamic peoples and their religion. While lack of literacy about Islam is only a subset of general lack of geographical knowledge, in this case it is racist and supports injustices, war and imperialism. Every event involving Muslims is seen through a biased filter. For example, Steven Salaita, author of *Anti-Arab Racism in the USA*, notes that massacres such as the one perpetrated at Fort Hood by army psychiatrist Nidal Hasan are rather common in the United States, but in most cases—as with the

Columbine killers, Kaczynski, Rudolph, Cho, or Holmes—the media doesn't mention the murderer's religion.

We in America need to become more literate about the Islamic world. Mohja Kahf, novelist and U.S. English professor, notes that "Islam never really 'took' in the Arab world" and that repression of women, the double standard, and honor codes come from pagan tribal customs, not from the Koran. Kahf says, "Here in the United States, religious Muslims can practice Islam without those entrenched codes," and some Muslim immigrants identify with the Pilgrims who emigrated here in order to worship God freely.

Politics surrounding Israel adds to the 'clash of civilizations' bias. The 45-year occupation of Palestinian land by Israel is a seemingly intractable problem. This situation can't be understood without its historical context. It is easy to understand how after centuries of European persecution culminating in the genocidal horrors of the Nazi Holocaust, Jews would develop a desire for a secure homeland of their own. But the Zionist plan, invented in the 19th century by a secular Jew, inevitably meant displacing Arabs who already lived in Palestine—much as the European settlement of America and Australia meant ethnic cleansing of the native populations there. In 1945, Jews owned only seven percent of the land known as Palestine, and Arabs owned the rest. Today the situation is almost completely reversed, and Israel occupies most of the land within its borders.

Note that if everybody decided to go back to the land of our ultimate origins, all seven billion of us might converge on southeast Africa—quite an impossible dream.

Because of Israel's long occupation of Palestinian territories, and consequent wars and conflicts with Arab nations, the state of Israel is at the center of Mideast hostilities, a never-healing sore spot. Islamic radicals use Israel's maltreatment of Palestinians for recruitment propaganda. United States financial support for Israel as a client state makes Israel even more suspect in the eyes of its neighbors. Israel is nuclear-armed, Iran could soon be, and several Arab states are thinking about doing the same. Another Mideast war could set off the Armageddon that 99.9% of the world dreads while a tiny ideological fraction in America looks forward to it.

Perhaps a third of U.S. evangelists show intense sympathy for Israel, according to Bill Moyers. The most zealous of them, Christian Zionists, worsen the situation by supporting right-wing, imperialist governments in Israel and promoting the inevitability of Armageddon. Christian Zionists have no more real concern for Israeli Jews than they do for Palestinians. They actually desire a devastating war in the region to fulfill their interpretation of Scripture and selfishly put themselves closer to personal salvation.

Let us look at Israel's actual situation, 60 years after its founding. At 8,019 square miles, it is slightly smaller than New Jersey. Only 17% of Israel is arable land—in fact, it is largely a desert. The majority of Israelis live in cities on the seacoast. Aside from Gaza and the West Bank, almost one-fifth of Israel's population is Arab, and Arabs have a higher reproduction rate than Jews. Israel is surrounded by neighbors of a different culture, language, and religion, whose populations greatly outnumber it. Israel's mistreatment of native Arabs (similar to how North Americans, Europeans, and Australians mistreated their own conquered peoples in the past) is a constant irritant to its Arab neighbors. Burgeoning populations of both Jews and Arabs are taxing the limited water resources of the area, leading to competition for this most vital resource.

The Jews are still in a dangerous situation. Israelis have responded to this danger by electing right-wing, militaristic regimes and arming themselves with nuclear weapons. Orthodox Rabbis dominate Israel's government, although an estimated 44% or more of Israeli citizens are secular and many others are liberal Reform Jews. As an example of this religious dominance, it is not

legally possible to have a civil marriage in Israel. This semi-theocratic identification of the state with the most conservative form of Judaism is one reason some conclude that we should not regard Israel as a model of democracy.

Many Israelis prefer not to live in constant fear and military preparedness and for this and other reasons leave Israel. By one estimate, 760,000 Israeli citizens now live abroad. A large proportion of those leaving Israel had originally emigrated from Russia. Some Israelis of military age refuse to serve in the occupied territories ('refuseniks') because they cannot in conscience treat Palestinians as unfairly as successive governments have done. Israel's leaders have led the country into brutalities inconsistent with Jewish religion and traditions.

A fair and just solution to the struggle between Israel and Palestinian Arabs would not only make life better for both groups of suffering people but would potentially reduce the violence of militant Islamic groups elsewhere and arming of states like Iran. A number of proposed solutions have come forward over the years, generally ignored by governments and media in favor of sterile political maneuvering. Howard Cort lists eight alternative solutions including: one state, a binational state, two states, a federation, or a confederation.

Scores of specific proposals have come from thinkers as diverse as Martin Buber and Noam Chomsky, among others. Many decentralists see confederation as the most viable answer, and some envision a tripartite confederation of Israel, Palestine, and Jordan. Joseph Abileah, an internationally known Israeli pacifist and leading member of the Society for Middle East Confederation, suggests a confederation that would ultimately be open to any country in the Middle East to join. He said it "should be formed with the idea of creating a United States of the Middle East in the future." +++

Dr. Mubarak Awad and Professor Abdul Aziz Said, leaders in non-violence, peace, and conflict resolution programs, present "Eight Steps to Israeli Palestinian Peace," which begins with a reconciliation process like that in South Africa. They say "Both sides must undergo a change of mind." Several peace groups already exist in Israel, some with both Jewish and Palestinian members. There are Jewish peace groups in the United States as well. Also, American Jews have formed more moderate political groups to counter the powerful Jewish lobby A.I.P.A.C. with its strong support of Likud Party policies in Israel.

On the small scale, individuals often reach out to each other. A few years ago in my own city the Jewish community dedicated its first temple in an inter-faith celebration. The project's general contractor was Fadil Bayyari, a Palestinian Muslim who donated his services. A Faith to Faith Initiative grew out of the friendship between Bayyari and Jeremy Hess, chairman of the temple building committee. There are many such examples. +++

Finally, Brazilian Claude G.S. Martins made the following suggestion that could be followed by more than one country to help defuse immediate tensions if not serve as a longer-term solution:

> The international community can assist in relieving the population pressures on the region's environmental conditions through providing all communities with opportunities to emigrate to other countries. Brazil, for instance, can offer a new base for Jewish and Palestinian communities, in which the national cultural identity of both can remain intact regardless of their physical location of residence and which will not require individuals to give up their current citizenship, nor their national aspirations. +++

10,000 Societies in 190 Nation-States

Governments have never learned anything from history, or acted on principles deducted from it.

~Friedrich Hebbel, German poet and dramatist, 1813-1863

The world's political nations are not at all equivalent to its ethnic or cultural nations. For example, Northern Afghanistan and northwestern Pakistan are populated by the same ethnic/cultural tribal group, the Pashtuns. Some commentators are already calling this area Pashtunistan. Associated Press writer Kathy Gannon says that in many ways the Pashtuns and their ethnic agenda are at the core of the armed conflicts in both Afghanistan and Pakistan. They are 42% of Afghanistan's population, 15% of Pakistan's, and they largely make up the Taliban. U.S. policy in Afghanistan should certainly focus on the desires of Pashtuns to be one national entity, especially if this is fueling the present conflict.

As Elise Boulding pointed out, there are "10,000 societies living inside 168 [now 190] nation states." For instance, Russia covers eleven time zones, and over 100 nationalities live within its borders. Many of the world's 10,000 societies are transnational, such as the Kurds or Romany, while others are ethnic minorities within other states, such as Basques, Lapps, Chechnyans, Tamils, Ibos, Bretons, Zulus, Quebecois, and Native Americans of numerous tribes throughout the Americas.

David Maybury-Lewis, a Harvard anthropologist, notes that English uses the same word for ethnic/cultural nations as for political states and nations. But he says "The technical distinction between state and nation is critically important because so many of the world's problems involve the lack of correspondence between the two." Enlightenment theorists in the 19th century assumed that a unified democracy requires all the smaller peoples and cultures to be absorbed into the larger ones. In fact, many commentators still consider ethnicity to be "both pernicious and obsolescent." They did and do not consider the possibility of limited autonomy within a multi-cultural state. The liberal principle of recognizing only states and individuals is followed by the United Nations. (It might better be described as the United Nation-States.)

Geographer De Blij notes European imperialism drew a boundary framework on the world "in ignorance of much of the world's natural resource base and with often deliberate disregard for cultural geographies." One result is that more than 10% of all nations are landlocked. The governance of African nations in particular is often greatly complicated because national boundaries were set up by departing colonial powers to include several tribes with their different cultures, languages, and traditional regions in one country. This initial situation presented huge challenges for these new governments, which some have not yet overcome. The Rwandan massacre was a horrifying manifestation of this problem.

In Europe, notes travel writer Rick Steves, "Modern political borders are rarely clean when it comes to dividing ethnic groups….In our lifetime, we've seen terrible violence as regions have challenged nations [nations have challenged nation-states]." Separatist movements of Basques, Irish, Corsicans, and Catalonians are among those that have used terror tactics. But as Steves points out, such conflicts are often resolved peacefully. For instance the old Czechoslovakia, which forcibly united the Czechs and Slovaks in one country, peacefully divorced in 1993 to form the Czech Republic and Slovakia. +++

Maybury-Lewis describes how various nation-states have dealt with multi-ethnic populations. Indonesia, for instance, came into existence in 1945 as a large archipelago of 14,000

islands, with 300 ethnic groups who had only one thing in common, which was that they had all been part of the Dutch East Indies. Indonesia's first president, Sukarno, gave it the great advantage of a single, non-controversial language based on a trade language. But Indonesia's later ethnic tolerance came at the cost of repressive government by a military autocracy. On the other hand, post-Franco Spain, with a long regionalist tradition since the Middle Ages, has accommodated its multiethnicity without an authoritarian government. +++

Many ethnic conflicts have revolved around language. De Blij says about 6,912 languages still exist today. This means that one nation-state may contain many languages, and not only because of recent immigration. For instance, 200 or so Native American tongues are still spoken in North America, although many of them have only a few speakers and are at risk of disappearing. While the great majority of Mexicans speak Spanish, indigenous peoples in Mexico communicate in over 60 languages such as Nahuatl, Mayan, Mixteco, and Zapoteco. Within the borders of India, one can hear 65 languages.

The right of indigenous minorities to speak their native tongue has been an issue in many countries, including the UK and Canada. One recent incident took place in Kuala Lumpur, where riot police tear-gassed protestors who wanted the national Malay language used to teach math and science in schools. Official policy since 2003 has been to teach these subjects in English. In Slovakia, a recent law limits the public use of Hungarian and other minority languages, although the country has a large Hungarian population. This has created conflicts not only within Slovakia but also between Slovakia and Hungary. On the other hand, Turkey recently announced new measures of reconciliation with its minority Kurds, including the removal of restrictions on the once-banned Kurdish language. +++

In Europe generally, Steves says the 'little languages' are thriving. The EU has 23 official languages. More people are speaking Irish than a generation ago, and the BBC does radio broadcasts in Scottish Gaelic. Steves says that in Europe today there are three loyalties: to your region, to your nation, and to Europe. City halls often fly all three flags. The European Union is promoting ethnic regions over modern political entities and this could be a positive trend for other continents as well. Consider the possibility of a more decentralized world organized by bioregions and cultural nations rather than solely by nation-states. +++

Migrants and Refugees: In the United States, Canada, and Europe, immigration that was welcomed while economies were booming now results in majority fears and in many cases a discontented, unemployed underclass (as in the poor immigrant suburbs circling Paris). As distinct from migrants who seek economic opportunities, refugees are often trying to escape violence in their home countries or portions of it. As I write this, up to three million Pakistanis are fleeing war in the Swat region that borders on Afghanistan. (This 'war' is an attempt to kill 4,000 Taliban soldiers in the area.) That migration is internal does not necessarily make it easier. For war refugee populations such as Palestinians, Tibetans, Afghanis, and Iraqis who live in other nations, the host countries are relatively poor countries that have trouble taking care of their own citizens. Not surprisingly, the host country may not extend a warm welcome, and jobs are all but nonexistent for newcomers.

Another cause of migrations is dam-building, common in the developing world, especially South East Asia and Latin America. Molly Conisbee and Andrew Simms of the New Economics Foundation (NEF) say that in India, dams have displaced 20-50 million people, almost all of them tribal people.

> Such forced moves have proved deeply traumatic….Resettlement in new areas, among peoples sometimes hostile to their presence, has torn the heart out of many formerly self-reliant and independent cultures….Like India, many governments have a poor record in their treatment of tribal or indigenous peoples, and displaced communities have received little or no compensation for the loss of their lands and way of life.

People may become migrants or refugees because of wars, repressive governments, abuse of minorities or indigenous people, bad economic conditions, or natural disasters, but the challenge of people on the move is about to become much greater. Because of climate change, an estimated 150-250 million people may become environmental migrants by 2050. That would double today's rate of international migration. Conisbee and Simms say "Current immigration policies are not remotely capable of dealing with the potential numbers involved."

Who are these people, and where would they go?

The migrations caused by environmental changes will likely involve poorer people, more women, children and elderly, from more desperate situations than the economic migrants of today. They will be threatened by rising sea levels, cyclones, desertification, salinization of crop-growing land and drinking water, landslides, loss of marine life for fishermen, floods, and lack of water supplies that depended on ancient glaciers that are now melting too fast. The thinning of Tibetan glaciers may create as many as 15 million environmental refugees in South Asia. Low-lying Bangladesh (population 153 million) is considered the country most affected by rising sea levels, especially if it does not build dikes such as in the Netherlands. It would be a costly project for a poor nation, and the Bangladeshi coastline is much longer than Holland's. Among the countries in most danger are Vietnam, Tajikistan, and many small island nations such as the Maldives, Tuvalu, Kiribati, and Palau which could disappear entirely.

These countries are not the only ones affected. For instance, Janos Bogardi, director of the UN Institute on the Environment and Human Security, predicted major flooding in the deltas of rivers such as the Nile, Mekong, Rhine, and Mississippi. The world has 19 megacities, of which 16 are on coastlines. Some coastal land is already sinking, with subsidence affecting Manila, Bangkok, Shanghai, and Jakarta. Rising tides would threaten most of South London, The City (comparable to Wall Street), and the tube, London's subway. Coastal cities such as New York and Boston in the Northeast United States are also at risk of flooding by rising seas.

Some suggest that the countries that have contributed the most to global warming should take in a proportionate share of those made homeless by their actions. Pacific Islanders are likely to head toward Australia, although Australia is not prepared for this exodus. A report by a coalition of Australian aid, development, church, and environment NGOs pointed out that since Australia has one of the world's highest rates of greenhouse gas emissions per person, Australia makes a "disproportionate contribution" to global warming and has a moral obligation to take action. The first step is to review its immigration program.

Since the United States contributes about 25% of global warming emissions, as the situation unfolds this country could become morally responsible for something like 40 million refugees. That is equivalent to the current population of the state of California. Are we ready to accept this responsibility? Is anybody making 100-year plans? +++

Connisbee and Simms recommend changes in public perception, in definitions, and in the laws and treaties that cover refugees. First are perceptions such as the notion refugees are flooding into the UK (where NEF is located) and the EU. But the authors say that besides generating the bulk of refugees, poor countries such as Burundi and Guinea are also the ones mainly providing asylum to them. "[We should not] expect impoverished states to respond to

379

environmental calamities that are not of their own making." Also the British public vastly overestimates the numbers. According to a poll, the British people thought that 23% of the world's refugees and asylum seekers were in the UK, but the reality was less than two percent.

A Geneva Convention to define and protect refugees that was approved in 1951 does not include environmental reasons to grant refugee status. The United Nations High Commission for Refugees (UNHCR) resists taking on this task, on the basis of having limited resources. Connisbee and Simms argue for updating the Geneva Convention to include the category of "environmental persecution" based on the idea that the environment can be used as an instrument of harm, as in dam-building projects or building new coal plants, intentional behavior that we know can result in environmental refugees. They say it may be necessary to write a new international convention specifically about environmental refugees. +++

Ecological Debt: A long campaign to get rich nations to forgive the crushing economic debts of poor nations is finally bearing some fruit. Some advocates for global justice want to go further and talk about ecological debt: how the rich nations have enriched themselves with the natural resources of poorer nations at the expense of the planet. Poor nations are left to deal with the environmental destruction. Conisbee and Simms say that the world needs to recognize the existence of "the debt accrued to the global community when citizens of one country take more than their fair share of a global environmental 'common' such as the atmosphere." They suggest that nations together agree on ways to measure ecological debt, such as a sustainable *per capita* level of fuel consumption. This, they say, "would help to clarify the financial and environmental obligations of 'over-consuming' countries." Ecological debt applies to more than climate change, as Andrew Simms describes in *Ecological Debt: The Health of the Planet and the Wealth of Nations* (2008). When wealthier nations acknowledge their ecological debts, they can pay them back in a way that helps us all survive.

Collective PTSD

I have made a ceaseless effort not to ridicule, not to bewail, not to scorn human actions, but to understand.
~ Baruch Spinoza, Dutch-Jewish philosopher, 1632-1677

Most of us are familiar with post-traumatic stress disorder. Some know it first hand. PTSD afflicts many combat veterans and also people brutalized by war, torture, rape, or child abuse, also those who suffered serious injury and loss from auto accidents, home fires, natural disasters, plagues, and similar terrible circumstances. For instance, the survivors of an earthquake or tsunami that took away most of their family may well suffer some form of PTSD. Even non-humans such as elephants, highly intelligent and social beings, can suffer from PTSD as a result of early traumatic orphaning and lack of adult animals with which to bond.

An article in *Nature* by G.A. Bradshaw and others says of PSTD victims:

Long-term studies show that [many individuals] face a lifelong struggle with depression, suicide, or behavioral dysfunctions. In addition, their children and families can exhibit similar symptoms, including domestic violence. *Trauma can define a culture* [my emphasis].

Let us expand this idea and propose that a similar trauma may afflict large collections of people—tribes, nations, or minorities—who suffered under unusually harsh conditions for

several generations or centuries. Here, let us specifically consider harms caused by other human beings. In some cases, the exploitation, repression, or ethnic cleansing continues today. Even if it happened generations or centuries ago, the bitterness often remains to be projected onto modern people who are only symbols of the ancient injustices. In the former Yugoslavia, deep resentments flared up that had their roots in ancient protracted wars with the Ottoman Empire.

We might call this disorder Collective PTSD or CPTSD. Depending on the nature, degree, and length of oppression or trauma and the group's cultural characteristics, reactions may differ. There may be an epidemic of alcoholism or other substance-abuse or a lot of crime and social sabotage; the group's desperation may breed suicide bombers or other terrorist tactics, or they may descend into a chaotic warfare against each other. Or, having gained some power, the abused may inflict on others the same abuses that were inflicted on them. The regions or nations in which afflicted people live are often epicenters of simmering conflicts and civil wars.

The Russians, after many years of repressive rule, devastating wars, environmental disasters, break-up of their empire, and finally economic chaos thanks to help from emissaries of the Chicago School, went into a mass depression with high rates of alcoholism. Less obviously traumatized, today's neo-Borderers still demonstrate lingering resentments, not only from ancient massacres in Britain and defeat in the Civil War but also from centuries of near-feudal exploitation first in the British Isles and later as sharecroppers in the American South. This group needs some affirmative action in a new version of that policy based more on class and access rather than ethnicity or gender. The GI Bill after World War II was a highly successful example of such affirmative action and helped lead to the middle-class prosperity of the 1950s. A new GI Bill began in August, 2009, with better benefits than the old bill and the VA expected nearly half a million veterans to tap it in the coming year.

Some traumatized groups have simply died out, as did the Arawaks of Hispaniola (now Haiti and the Dominican Republic). They numbered about a million people when Columbus arrived, but after brutalization and enslavement by their Spanish conquerors they had dwindled to 60,000 in only 13 years, and less than a century later there were none. Many simply committed suicide.

However, let's also note that most groups that have been victims of historical violence do finally manage to overcome CPTSD one way or another—by preserving their own spiritual traditions, perhaps by assimilating to the majority culture just enough to make use of its legal and other institutions to improve their own situation, and of course by the great perseverance and creative abilities of human beings. In any case, paying special attention to the needs of traumatized members of the species could help the human race overcome old habits of war and dominance, in order to focus energy on meeting our major challenges together. +++

Thich Nhat Hanh, Vietnamese Zen Buddhist monk says: "How can we love our enemy? The only way is to understand him, to understand how he has come to be the way he is." There are also ways that humans have worked out to overcome lingering resentments of the past, especially when the wounds of war and violence are fresh and raw. The next chapter describes some methods and historical examples of conflict resolution and reconciliation that can help traumatized minorities as well as to help heal society after civil wars and violent repressions.

Chapter 15
Repairing the World

All peoples are members of the same body, created from one essence. If fate brings suffering to one member, the others cannot stay at rest.
~Saadi, Iranian sage, 1213-1291

Four life-enhancing ideas at the core of many religious, spiritual and ethical traditions are the intrinsic value of nature, the intrinsic value of other individuals, the intrinsic value of peoples and cultures other than our own, and the necessity for an ethic of reciprocity and social justice.

The phrase **Tikkun olam** is Hebrew for "repairing the world" or "perfecting a flawed world," an idea important in Judaism. In the sixteenth century, the Jewish mystic Isaac Luria taught that God created the world as vessels of light to hold the Divine Light, but as God poured the Light into the vessels, they shattered. Now Humanity's task is to free and reunite the scattered Light and restore the broken world to the form God intended. Humankind is thus a partner in God's creation. In progressive streams of Judaism, *Tikkun olam* implies that Jews should work towards social justice.

Achieving social justice is not only a 'feel good' aim, although there is certainly nothing wrong with increasing the world's sum total of truth and harmony. Social justice is necessary because of the dangers of social injustices: they provide motive power for destructive conflicts. These struggles, military or not, consume precious lives, land, livelihoods, and the energy that the human race needs in order to work on other problems such as climate change.

The following repairs could bring greater truth and justice, freeing up our collective energies for cooperative survival efforts: +++

Reconciliation and justice after civil war or the end of a violently repressive regime

Treaties and just relations between nations after war

Sovereignty and rights of indigenous people

Integrating minorities, immigrants, and refugees

Reparations to "sacrifice groups" within a nation or entire nations that have carried more than their share of the collective burden

Protecting political and religious dissenters and whistleblowers

Bringing to justice those guilty of war crimes, genocide, democide, and torture

Healing the victims of war crimes, genocide, democide, and torture

Glasnost: the Truth Comes Out

> *The half-life of violence is very long.*
> ~ Diana Francis, openDemocracy, 2010

The first need is to acknowledge past mistakes**.** Mikhail Gorbachev, then head of the Soviet Union, introduced the idea of *glasnost* or openness to his country in the mid-1980s. He was quoted during an interview in 1989 as saying "I detest lies." The turning point appeared to be the Chernobyl nuclear disaster in 1986, which Soviet authorities tried to cover up for forty-eight hours. Then they broke silence and were completely honest, giving full details. Other environmental disasters soon came to light, such as the desertification of Central Asia because the Soviet government had diverted rivers to irrigate cotton plantations. *Glasnost* extended to past regimes, revealing the brutal oppression by Stalin and other leaders. Gorbachev allowed a liberal press to grow within the USSR, and it eventually began to criticize Gorbachev himself for the slowness of his reforms.

"The critical re-examination of history *glasnost* fostered was unprecedented in the USSR and affected every chapter of the country's history" said historian James Graham. Such a critical re-examination of history would be unprecedented in most countries. A number of nations besides the former USSR have ugly, bloody episodes in their past. Some countries have consciously tried to face their collective past. Germany for one has officially acknowledged the horrors of the Nazi period, but many nations have not fully admitted their own wrongs.

For instance, Japan has not fully acknowledged massacres and atrocities committed against Chinese civilians during the Sino-Chinese War, especially at Nanking in 1937. Turkey is unwilling to deal with the starvation of Armenians during World War I. Turkish novelist Orhan Pamuk was tried in court for "insulting Turkishness" by simply bringing up the matter. Pamuk said: "Thirty-thousand Kurds and one million Armenians were killed in these lands, and nobody but me dares to talk about it." Russia is not willing to deal with its long persecution of Chechnyans that goes back to the early nineteenth century. Australia and Canada have been forced to face atrocious behavior in their past toward indigenous populations. And so on.

The United States has some ugly facts to face about its past treatment of Native Americans, of Blacks under both slavery and Jim Crow, and other peoples during past exploitation, covert actions, and invasions of foreign countries especially in Latin America, the Caribbean, and the Philippines. Documents declassified 30 years after the September 11, 1973 coup in Chile reveal the large role of the U.S. government in financing and promoting the coup.

The super-patriot who believes in a mythologized history of a perfect country does not want to hear about it. Super-patriots must believe that no one could love an imperfect country, although we all love individual people who are imperfect (since there is no other kind). One reason many give for ignoring the past is that we are beyond all that, already reconciled—discrimination no longer exists. They assume that once civil rights legislation was passed in the 1960s and 1970s, there was instant equality; or if not then, certainly by now, the next generation.

However, a people does not completely recover overnight from genocidal treatment. Nor does an enslaved people immediately catch up after liberation from several hundred years of slavery and de facto slavery. For one thing, as a group they do not have the same accumulation of capital as those whose ancestors have been accumulating capital for generations. Most immigrants do not 'make it' for several generations unless they have initial capital or family backing from the old country. Discrimination did not wholly end because of laws. Even after

U.S. civil rights legislation, persistent Department of Agriculture policies resulted in the virtual extinction of the small black farmer. The legacy of redlining real estate is that inner city schools are much inferior to suburban ones with a larger tax base. Another holdover of racism is efforts in recent elections to disenfranchise minority voters using tactics such as caging and purging.

The historic oppression of Native Americans continues. They are the poorest sector in the United States. In the 1970s, the F.B.I. tried to destroy the American Indian Movement (AIM). A decade later the Department of Energy began a policy of soliciting indigenous nations to consider nuclear waste storage as a form of economic development. Bayley Lopez of the Nuclear Age Peace Foundation says, "In the quest to dispose of nuclear waste, the government and private companies have disregarded and broken treaties, blurred the definition of Native American sovereignty, and directly engaged in a form of economic racism akin to bribery." The group Honor the Earth, founded by Winona LaDuke, works to persuade tribes not to allow toxic industries on their land, no matter how lucrative it may be.

A third reason people give for ignoring past wrongs is that they personally were not responsible for something that happened fifty or 100 years ago. While that is true, taking on guilt is not the same as accepting responsibility. Just by being born white and middle class a person is in a relatively better position to get a good education and well-paid employment, to save up cash, to live in a better section of town, and so on. People do not want to hear that they are the beneficiaries of a continuing injustice; they prefer to locate its existence in the past.

Now that the economy has collapsed and jobs are scarce, hostility towards and exploitation of undocumented immigrants is predictably rising. Rachel Townsend, director of the Northwest Workers' Justice Center, deals with many cases in which contractors fail to pay undocumented workers ('wage theft') or put them in dangerous jobs without the availability of medical care if they are injured. Townsend says of such actions, "Nobody can be well psychologically if their riches or their life depend on the instability of someone else's life."

Restorative Justice is a theory of justice and a social movement that focuses on wrongdoing as it affects individuals and communities rather than as crimes against the state. Unlike the adversarial justice system, RJ looks beyond retribution and revenge to reparation and reconciliation; it tries to stop the cycle of violence. Restorative justice aims to heal victims, restore offenders to law-abiding lives, and repair harm done to relationships and the community as a whole. One RJ scheme that has shown success is dialogue and mediation between victims and offenders. Victim-Offender Mediation began about 35 years ago in a Canadian case in which accused vandals met face-to-face with their victims. Several studies have shown that violent criminals are less likely to repeat their crimes after VOM, and that victims regain self-confidence and trust. Additional programs are family group conferencing, Circles of Support and Accountability for sex-offenders, and others in North America and UK. +++

Our main interest here is applying restorative justice on the larger scale. A number of current injustices and old resentments constantly threaten world peace. They consume human energies needed to promote species survival instead. Ways exist to work out long-standing conflicts and ancient grudges before they flare into more wars and more resentment. Some nations have actively pursued a process of reconciliation to temper the demands of justice with the necessity for people to live together peaceably after a civil war, genocide, or era of harsh repression and civil rights violations. Otherwise, the same conflicts may rise again. Michelle Malese, writing for the Beyond Intractability organization, says that the need for healing in such cases is first *remembering* the atrocities committed; second, *repenting*; and third, *forgiving*.

War crimes inquiries and truth commissions help the first part of this process. It is first necessary to know the truth. After the 1994 massacres that left nearly one million Rwandans dead and several hundred thousands of individuals accused of committing violent crimes, the devastated country was faced with an enormous judicial challenge, including a lack of judges and legal infrastructure. After attempting justice in traditional Western style, Rwandans realized this would require many years if not generations to resolve. In 2002 they turned instead to a modified version of a community-justice system used to resolve tribal disputes. In the 'Gacaca' system, victims confronted representatives for the accused before a panel of elected community leaders. In exchange for a confession, the panel offered leniency—replacing half of a prison sentence with community service. In this way, the crimes became known. Over a decade, two million crimes were tried and the system is now closing.

Learning the truth is a beginning. Next is to remember the truth. The people of Rwanda found a life-affirming way to express their grief about the horrors that occurred there 18 years ago. Rwanda has a collective mourning in April, the month of the genocide. During this month of remembrance, Rwandans express their grief through music, each song telling a story. The past lives on as conscious memory.

Reconciliation may be aided by various kinds of restitution, changes in social structure, and adding or reforming democratic institutions. In certain cases, an acknowledgment of guilt and an apology goes far. The first truth commission was in Uganda in 1974. Truth and reconciliation commissions (TRC) and other formal means of reconciliation have worked to some degree in countries such as South Africa, Argentina, Northern Ireland, Chile, Guatemala, and El Salvador, a total of more than 30 nations. Some of these processes which did not include any form of retributive justice for perpetrators of human rights violations or of reparations for survivors have not led to a complete reconciliation and closing of the books.

 Some traumatized people are still waiting for a TRC, or for a more comprehensive one. Others fear the process. The people of Spain reportedly have been afraid to work out the very bitter conflicts of the Spanish Civil War and forty years of dictatorship, for fear of inflaming passions once more. Jon Lee Anderson says: "The problem is that although the Spanish Civil War ended seventy years ago, victor and vanquished were never truly reconciled." Most recently, a Spanish judge, Baltasar Garzón, was charged but acquitted of abuse of powers because he investigated atrocities committed during the Spanish Civil War and the Franco dictatorship. The counsel for Human Rights Watch said Spain should repeal the 1977 amnesty law that led to the charges against Mr. Garzón.

Philip Gourevitch says that "a failure to reckon honestly with historical trauma, and to hold those responsible for it to account, leads to a kind of oblivion, in which memory becomes so distorted that it is lost." I would add that although conscious memory is lost, large-scale horrors and injustice do live on at some level of the collective unconscious. The past does not disappear. For both the group and the individual, repressed feelings are not lost but emerge again in strange new forms, usually dysfunctional. Past widespread horrors affect the perpetrators of injustices as well as those who suffered under them. The perpetrators may suffer from guilt, or they attempt to justify themselves with further transgressions. The sufferers may act as some abused children do, becoming abusers in their turn. Or their depression may be passed on to their children.

The need to come to terms with *individual* misdeeds is recognized by various religions. For Jews, the highest holy day of the year is Yom Kippur, a day of atonement. Atonement means to make amends. Catholics confess to the priest, and those saved by revivalists confess to the assembly about their sins, assured that God or Jesus forgives them. But for Christians, a

Judgment Day in the future refers more to God's punishment than to the individual's current responsibility to make up for what he or she has done. In some cases, being 'born again' becomes a form of forgetting of the past, a kind of psychological suppression of guilt. Let us not forgive and forget too quickly, but try to set things right again first. In other words, I am suggesting that we humans make a concerted effort to clean up our act at every level, individual and collective, not from fear of punishment in the future, or from any abstract idea of justice, but to stop the neurotic repetition of violence and domination that could destroy us all. +++

Most nations have minority populations of indigenous people that were and in some cases still are harshly repressed by the dominant population. Many dominant groups have begun to recognize their responsibility; for example, in Australia a federal court judge recently gave the Noongar tribe of Aborigines a limited land title claim over the major city of Perth, part of their traditional land. The Noongar say this issue is about recognition of their rights, not any attempt to displace homeowners. Soon after his inauguration in early 2008, the new Prime Minister of Australia, Kevin Rudd, gave a momentous speech that led to cheers and tears of joy. Rudd said:

> I move that today we honor the Indigenous peoples of this land, the oldest continuing culture in human history….We apologize for the laws and policies of successive Parliaments and governments that have inflicted profound grief, suffering and loss on our fellow Australians…

The United States also has 'bad karma' to work out. After 122 years there has not been an official apology about the massacre of three hundred unarmed Lakota, many of them women, children, and elderly, by the U.S. Seventh Cavalry at Wounded Knee. Most of us have forgotten about it, but the Lakota have not. Then there is the fact that after two hundred years of slavery, another hundred years of Jim Crow, and forty years since civil rights legislation, African Americans have not yet reached full parity with white Americans. Race continues as subtext in national politics, with attempts still being made to disenfranchise this minority during the 2012 election campaign.

Four decades after the Vietnam War, the United States has begun a $43 million project to clean up dioxin in Vietnam's soil and water, the toxic legacy from spraying Agent Orange during the war. About ten times that amount may ultimately be needed to clean up dioxin hot spots and help people disabled from dioxin-associated illnesses.. The U.S. and Vietnam have become trading partners and Vietnam is a key U.S. ally in defending the South China Sea, with its potential oil and gas reserves. So here altruism and self-interest work together.

There are unacknowledged consequences of the United States Empire of almost 800 military bases in at least 151 countries. Chalmers Johnson notes there are 38 U.S. bases on Okinawa alone. Some of these countries, such as Kyrgyzstan and Ecuador, have asked the United States to leave (although Kyrgyzstan was persuaded to let the base stay in exchange for tripling base rent to $60 million and other financial benefits). Many Czechs and Poles opposed the Bush plan to put missile bases in their countries, some fasting for long periods in protest. (Obama ended the plan.) Why does the United States, so jealous of its own sovereignty, expect the rest of the world to accept these permanent incursions on their soil? In fact, there is now concerted action to close those U.S. military bases. The International No Bases Network was formed in early 2007 as activists from 40 countries met together in Ecuador.

Dud Hendrick, who teaches Peace Studies at the University of Maine, says these bases have led to many problems such as intimidation of the local people, meddling with their governments, crime waves that are never tried in local courts, widespread prostitution, and environmental degradation including Superfund sites. The worst group of injustices concerns indigenous

peoples whom the United States completely displaced (sometimes with the collusion of other countries such as Great Britain or Denmark) to make way for United States military bases. Three such relocations involve the Marshallese Islands, Diego Garcia, and the Inuit who were evicted from Northwest Greenland to make way for Thule Airbase in 1951. Not only did indigenous people lose their homes and livelihood but in some cases they were virtually 'kicked out'. Hendrick says that in 1971 when the United States and Great Britain wanted the strategic island of Diego Garcia, located in the Indian Ocean between Asia and Africa, they gassed people's pet dogs and evacuated the inhabitants without giving them any help. Many of the evacuees now live on the island of Ibai, known as 'the slum of the Pacific.' All three of the groups mentioned still seek restitution for their lost land.

In various situations like these and other, older injustices one might suggest not reparations in the sense of individual cash payments, but instead, atonement in four or five parts: +++

Acknowledgment (*glasnost*)

Apology by the government(s) responsible

Restitution and return (where possible) for displaced people

Substantial benefits, such as passage of important reform laws; for example, the USDA is once again attempting to rectify generations of discrimination against black farmers after eight years of de-emphasis on civil rights during the Bush administration.

In some cases, a symbolic benefit, such as a pardon of Leonard Peltier, a member of AIM who has served decades in prison following what is internationally believed to have been a tainted trial involving FBI misconduct

The United States might also publicize, apologize, and offer a substantial benefit to residents of national sacrifice areas, to include land used directly by the government, such as Dugway Proving Ground in Idaho, and others which the government has failed to protect such as Navajo land poisoned by uranium mining, Appalachian destruction by coal mining, and "Cancer Alley" in the Baton Rouge area of Louisiana. Of course the first item of business is to stop the destruction and poisoning. Second is to restore the land or otherwise right the injustice.

While reconciliation is the long-term goal, there is also a need for justice. The Nuremberg Trials set a precedent for prosecuting war crimes and crimes against humanity. However, nations which have overseen war crimes have a habit of denial. Historian Herbert Bix, who won a Pulitzer for his *Hirohito and the Making of Modern Japan*, compares the responses of Japan's leaders, to atrocities committed by Japanese forces at Nanjing, China in 1937, to responses of American leaders to atrocities committed by American forces in Indochina in the 1960s and early 1970s. In both cases, except during Japan's postwar years of U.S. occupation, there was official denial of war crimes. Bix says

No senior American decision-maker ever acknowledged that the concept of "crime" was applicable to what the U.S. did in Indochina….The only flaws in the war that they ever perceived were strategic and tactical ones, and those pertaining to media access to the battlefield….The same self-righteous, narrow-minded thinking that characterized Japanese officers in wartime China during and after the Nanjing massacre, prevails today among U.S. officers, from Gen. John Abizaid at Central Command to frontline generals [such as] Ricardo Sanchez.

The legal principle of universal jurisdiction holds that in crimes that are exceptionally serious and far-reaching, the right to render judgment is not limited to the country where the crime was committed. The concept includes six kinds of serious human rights violations: genocide, crimes against humanity, war crimes, torture, extrajudicial executions, and forced disappearances. Amnesty International wants all national governments to give such power to their courts. So far, more than 125 nations have universal jurisdiction over at least one of the six crimes listed. +++

In January, 2010, a Dutch commission of inquiry concluded that the Iraq invasion in 2003 was illegal under international law. The seven-person commission included the former president of the Dutch Supreme Court, a former judge of the European Court of justice, and two law professors. This legal finding makes it more possible that some country will prosecute leading politicians and military leaders in the U.S. and Britain for war crimes.

The International Criminal Court was set up in 2002 to be the court of last resort for three kinds of crimes: crimes against humanity, war crimes and genocide. Currently, 120 states are members of the court and 32 countries have signed but not ratified it. Nations that have neither signed nor ratified the Rome Statute include India, China, and Indonesia—these three constitute 40% of the world's population. In 2002, the United States signed the Rome Statute but formally withdrew its intent of ratification, as have Israel and Sudan. The jurisdiction of the ICC extends only to those states which are members.

Several aspects of this ground-breaking institution have been quite disappointing, first that so many large and powerful nations have refused to ratify it. Second, it is very slow. The ICC took ten years to deliver its first verdict, against a Congolese warlord found guilty of recruiting child soldiers. The court has opened investigations into only seven countries, all in Africa, despite complaints about alleged crimes in 139 countries. Because of this focus on Africa, some accuse the ICC of a colonial outlook. Other criticisms concern the court's ability to fight against impunity—exemption or freedom from penalty or punishment. For instance, the 2008 request by ICC Prosecutor Luis Moreno-Ocampo to arrest Sudanese president Omar Hassan Ahmad Al Bashir for genocide and war crimes in Darfur could not be carried out because the ICC has no means or mandate to arrest a head of state.

Professor Michael S. Rozoff at the University of Buffalo notes with disappointment that ICC "extends the ambit of international institutions that build upon the system of States" rather than building on the sovereignty of the people.

Veterans and Soldiers

> *What has happened to our moral imagination?*
> Bill Moyers*, Welcome to Doomsday,* 2006

Several modern nations have mistreated their soldiers, for instance Argentina and Russia, as described in a previous book. The U.S. government owes apologies to military veterans and their families dating back to the Bonus Marchers. This includes the 'Atomic Veterans' (if any are left) and Vietnam vets whose sufferings from Agent Orange exposure and post-traumatic-stress disorder were not properly acknowledged and treated. Similar stone-walling and abandonment has faced Gulf War vets and Iraqi vets with unexplained medical problems, perhaps from DU weapons or mandatory vaccinations and also those suffering from head injuries and PTSD. There are reasons for the high rate of vets among homeless men (40% of the total) and high rates of suicide among vets. In recent years a scandal erupted because of poor treatment of injured Iraq

War vets at Walter Reed Hospital. Those who are asked to serve their country in war, whether draftees, volunteers, or National Guardsmen, should be assured of certain rights, including these:

The war is justified, for reasons that are transparent to all citizens.

War is declared legally (by Congress).

Soldiers are led by competent, professional military leaders without political interference.

Soldiers receive the arms, armor, and supplies that they need to accomplish their mission.

Soldiers are not used as guinea pigs in medical experiments.

Contractual agreements (such as length of service) are honored.

Soldiers are not ordered or put in a position to commit illegal and inhumane acts contrary to the Geneva Conventions.

Soldiers are not prosecuted in the stead of higher-ranking officers who ordered or permitted illegal and inhumane acts.

Soldiers wounded physically or mentally receive state-of-the-art care and after-care. Psychological injuries are acknowledged, and mentally wounded soldiers are not sent back into combat.
 (The American Psychological Association estimates that 30% of veterans returning from Iraq and Afghanistan suffer from some degree of mental disorder.)

Those with military disabilities whether from injury, chemical exposure, or psychological wounds, receive full compensation.

Women soldiers are acknowledged for their service and defended from sexual harassment and assault. (Up to half a million U.S. women have been raped by their military colleagues since the 1950s, and the military justice system has not effectively defended them.)

The United States is only one of many nations that could benefit from confronting past mistakes and persistent bad habits. We require world-wide Truth and Reconciliation. One of the first places to start is with Israel, the Palestinians, and Lebanon. Russians need to acknowledge their centuries-old oppression of Chechyans. Africa is filled with ugly struggles that have roots in the colonial era. The Kurds are still looking for their promised Kurdistan. Minority groups in many nations are struggling for their rights, including the right to use their own languages. Across the world, scores of ethnic and religious conflicts are ripe for *glasnost* and grassroots meetings of people working with good will and reason to find solutions, compromises, and where necessary, apologies and atonement. The United States could be a model in this regard.

Healing with Art and Music

I have found that the broken spaces are my living canvas. In our brokenness, our hearts reach for beauty.
~Lily Yeh, artist and founder of Barefoot Artists

Lily Yeh, born in China in 1941, is an artist who works in bleak and broken communities throughout the world in the belief that art is a human right and a foundation for deep social change. In Philadelphia, local children and adults in a ruined inner city neighborhood joined her in clearing out the rubble and transforming an abandoned lot into an art park, an oasis of beauty and greenery. The park further blossomed into The Village of Arts and Humanities, a community-based art organization that has transformed more than 120 abandoned lots into gardens, parks, and displays of art, revitalizing neighborhoods in the process.

In 2004 Lily Yeh founded Barefoot Artists to bring a vision to impoverished and war-torn neighborhoods across the world.

Another creative woman from Philadelphia, dancer Rebecca Davis, has launched outreach programs in Rwanda, Bosnia-Herzegovina, and Guinea—countries that have suffered genocides—using dancing as a tool for healing and change.

Kinshasa Symphony is a documentary about the power of music. It tells the story of Central Africa's only symphony orchestra, composed of 200 volunteer musicians and singers—working-people in the Congo megacity Kinshasa, one of the poorest cities in the world. Members of the Kimbanguist Orchestra practice six days a week, even after a long day of work and sometimes miles of walking. The orchestra is now 20 years old and has survived poverty, civil war, and political turmoil. "[*Kinshasa Symphony*] is a study of people in one of the world's most chaotic cities doing their best to maintain one of the most complex systems of joint human endeavour: a symphony orchestra." You can also see the joy in their faces.

Chapter 16
Nonviolence and Peace Traditions

It is not enough to say we must not wage war. It is necessary to love peace and sacrifice for it.
~ Rev. Martin Luther King, Jr., civil rights and peace leader, 1929-1968

Peace begins at the small scale, between any two people (and even within one's own self). Conflicts are a normal part of life and of relationships, but people need the tools to resolve them in a way that helps human relationships grow. Disagreements occur in schools, between couples and within families, between neighbors, in churches and social organizations, and in work situations. There are also conflicts on the larger scale such as between labor and management in a large corporation or industry, between different segments of the urban community, multi-party business disputes, factions within a nation, or two (or more) nations. Sometimes conflicts require outside mediation or diplomacy. Several institutions, professional facilitators, and information sources are available to help people transform local disagreements into win/win situations.

Conflict Resolution: It would help our species immensely for everyone to own the tools of conflict resolution. These can apply to every level of dispute from roommates and couples on up to nations. First, we must understand what the argument is really about. Academic Leadership Support at the University of Wisconsin notes that "People respond to the perceived threat, rather than the true threat, facing them. If we can work to understand the true threat (issues) and develop strategies (solutions) that manage it (agreement), we are acting constructively to manage the conflict**."** Their "8 Step Model" is summarized as follows:

"Know thyself" and take care of self (understand your own biases and triggers, and stay calm, healthy, and well-rested before and during negotiations)

Clarify personal needs threatened by the dispute (substantive, procedural, and psychological needs)

Identify a safe place and a mutually agreed time for negotiation

Take a listening stance into the interaction (Franklin Covey: "Seek first to understand, then to be understood")

Assert your own needs clearly and specifically (use "I-messages")

Approach problem-solving with flexibility (this may include brainstorming options)

Manage impasse (a sense of being stuck) with calm, patience, and respect

Build an agreement that works—collaboration or 'win-win problem-solving'

The 8 Step Model is especially useful in workplace disagreements. The source notes that our society tends to reward responses to conflict other than negotiation. Those who vigorously pursue their own interests are allowed to go their competitive way by others who prefer to accommodate. Controlling managers and leaders are frequently rewarded for being 'decisive.' In my own working career I've often seen bossy people chosen for managers although the most

effective bosses I had were facilitators and collaborators who were open-minded and respected the people they worked with. If the skills of conflict resolution were widely taught in schools and other venues—such as simulated situations in videos—this might also change the nature of workplace situations. Thousands of U.S. schools now have conflict-resolution training and peer-mediation programs. Studies indicate that they do reduce bullying, fighting, and suspensions.

Humans are not the only animals that have developed ways to resolve their differences and to reconcile. Most social animals have the occasional dispute. Conflict resolution has been studied in primates, whales, and other creatures. After a combative incident (usually between relatives) primates are more intimate, grooming each other or kissing and hugging. When killer whales have a disagreement, after a brief cooling off period they settle the dispute by swimming side by side (called echelon swimming). Reconciliation has been documented in dogs, feral sheep, spotted hyenas, lions, dolphins, dwarf mongooses, and domestic goats.

Nonviolent Communication: The Center for Nonviolent Communication (NVC) was founded by Marshall Rosenberg, who grew up in an often violent inner-city neighborhood in Detroit. This motivated him to learn ways to prevent violence. Rosenberg eventually received a Ph.D. in Clinical Psychology, conducting his own research into history, comparative religions, and other areas to identify the communication skills needed to reduce violence and support compassionate interactions. He describes the NVC's work as follows: "Whether we are working with a business or a country in great turmoil, the process is similar….first we identify who in a country or organization is open to our work, and expose them to its potential. Then we train them in the process itself. Finally, there is the hard work of actual mediation and conflict resolution."

The NVC has grown to over 200 certified trainers working in many countries, in school systems, workplaces, prisons, social service agencies, law enforcement, and with couples, families, and communities. Trainers encourage participants to teach the NVC process to family members and friends. NVC projects in Malaysia train indigenous people to use peaceful yet assertive ways to encounter corporations that want to clear cut their forests. In Colombia, Israel, and Palestine, CVC tries to stem the violence. In North America, NVC helps resolve conflicts between gang members and police, and between labor unions and management. Trainers taught NVC skills to tribal groups in an Afghan refugee camp in Pakistan. The Women's Project in Nagpur, India gives NVC training to Dalit ('untouchable') women and Muslim women.

Inbal Kashtan developed an NVC parenting project devoted to the transformation of child-rearing practices to those that support a culture of peace. Dr. Mary Mukandongo, a Rwandan woman who belongs to both of the Rwandan ethnic groups, now works with African refugees in Montreal. She says: "When we are able to use the compassionate language of Nonviolent Communication and come to the level of our feelings and needs, and are able to make our requests to each other, I feel from personal experience that reconciliation can take place."

You could say that every member of our species needs to learn Nonviolent Communication.

Avoid and Condemn the Bully Projection: A very dangerous habit of thought somewhat resembles the individual's ego-defense mechanism of projection, which protects one's ego by projecting onto others the disliked parts of oneself. Propagandists use this 'bully projection' to pick a scapegoat group (small and in a weak position) and paint it as powerful and threatening to the majority in order to justify repressive measures. Hitler used this technique and so do far right groups everywhere. In other versions, Saddam Hussein was depicted in the media as another

Hitler; a tiny group of gay people who want to marry are called a threat to the institution of marriage; and labor unions at low ebb are constantly referred to as "Big Labor."

Nonviolence or 'Truth Force'

Nonviolence is the greatest force at the disposal of mankind. It is mightier than the mightiest weapon of destruction devised by the ingenuity of man.
~Mahatma Gandhi, 1869-1948

Michael True, who chronicled the North American tradition of nonviolence in *An Energy Field More Intense than War,* says nonviolence is about "concepts and strategies without violence to persons." True says the common terms 'passive resistance' or 'nonresistance' do not accurately describe this idea. Nonviolence is the nearest English equivalent to Gandhi's use of the ancient Sanskrit word *satyagraha*, which literally means 'truth force'.

Nonviolence has a long history. Eastern religion contains the concept of *ahimsa*, or harmlessness, and includes consciousness of one's actions in nature as well as with other humans. In Jainism, even the intention of violence is violence. Buddhism teaches respect for all sentient creatures. The Indian emperor Asoka, second century B.C., had an early career as a ruthless warrior and ruler. He then viewed the results of his slaughter the day after a war ended. The sight of a city full of burned houses and corpses sickened him and he reportedly said: "What have I done? If this is a victory, what's a defeat then?" Asoka embraced Buddhism and gave up the policy of conquest in favor of peaceful coexistence. He also made domestic improvements ranging from irrigation projects, universities, and reformed laws, to wildlife preserves and animal hospitals. After two millennia, Asoka's attempt to develop a model state based on Buddhist principles still has influence in Asia.

Christianity also contains a 2,000 year-old tradition of nonviolence. Jesus famously told his followers to love their enemies and if struck, to turn the other cheek. Early Christians spoke out against war, for instance Bishop Ignatius of Antioch said 110 A.D.: "Nothing is more precious than peace, by which all war, both in heaven and earth, is brought to an end." About 160 A.D., after his conversion to Christianity, Justin Martyr said: "We who formerly murdered one another now refrain from making war even upon our enemies." The tradition of Christian nonviolence continues today, especially among the historic peace churches.

The idea of nonviolent resistance to injustice that Gandhi developed in India and Martin Luther King, Jr. adapted in the South during the 1960s is a specific strategy of nonviolence. Gene Sharp's book *The Methods of Nonviolent Action* lists 198 separate methods, from skywriting to the general strike, under categories of "nonviolent protest and persuasion, social noncooperation, economic noncooperation (boycotts, strike), political noncooperation, and nonviolent intervention." It is evident that there is nothing passive about such methods. Jonathan Bartley lists recent occasions when these strategies were successfully applied such as Serbia's Otpor students who led the struggle to overthrow Slobodan Milosevic. Diana Francis, a consultant on conflict, says that civil war was averted in Kenya in 2008 mainly through efforts of a team of local peacemakers (Rescue Kenya). Another example is described in Mukulika Bankerjee's *The Pathan Unarmed* (2000). The Pathan mountain people, though considered fierce warriors, organized a campaign of nonviolent resistance to British rule. Bartley says the Oxford Research Group has published 50 case studies of war prevention strategies used world-wide.

Dr. Lester Kurtz, sociology professor at the University of Texas, says "The *normal* way to get rid of dictators is to have a nonviolent Gandhian revolution." Such a peaceful transition occurred in 50 out of 67 cases of repressive governments that he studied. For example, in the late 1980s Estonia was struggling to become independent of the Soviet Union, but lacked large numbers or weapons. Instead they used song. As many as 300,000 people, almost a third of this small country's population, regularly put on folk costumes and gathered in the capital city of Tallinn to sing their defiance of Soviet rule with national songs and hymns. It became known as the Singing Revolution. Estonians did gain their independence in 1991 without bloodshed. Lithuanians also held regular songfests, and linked arms singing in the face of tanks, although they suffered some losses on the way to independence.

In *A Force More Powerful*, Peter Ackerman and Jack DuVall describe a score of occasions in the 20th century when nonviolent efforts furthered or achieved self-rule, restored democracy, resisted invaders, or gained civil rights. The authors say:

> Never in the postwar period did a military insurrection or violent coup extend freedom to the people in whose name power was taken….The choice of violence as the means of struggle by the Tamil Tigers in Sri Lanka and the ETA in the Basque Country was fatal to the ends they sought, if for no other reason than this: they could never match the firepower of the governments they confronted….No extremity of violence can substitute for the people's support.

The protestors of the Arab Spring, the Spanish *Indignados*, and the Occupy Wall Street movement have all chosen to demonstrate nonviolently. That is the heart of their power, as it was for Polish Solidarity, the Velvet Revolution in Czechoslovakia, the 1986 People Power Revolution in the Philippines, and many others.

American Tradition of Nonviolence

Multiply courage by compassion and what emerges is nonviolent resistance."I will not obey my enemy, and I will not kill him either. I will pursue my own life journey into loving life."
~ Rabbi Arthur Waskow

True's aim in *An Energy Field* is to point out a persistent counterculture in the United States, from colonial times to today, with other values and priorities than the militance demonstrated by the dominant culture. This long tradition is little known either to Americans or the rest of the world, which views American culture as violent, both because of aggressive U.S. foreign policy and American popular culture exported abroad. Yet True says there is plenty of evidence that most Americans actually find violence abhorrent. For instance, before entering World War I in 1917, Woodrow Wilson found it necessary to send 75,000 propagandists around the country to advocate armed intervention. Wilson imprisoned dissenters and suppressed publications, yet there were many conscientious objectors and war resistors.

True notes that the number of Vietnam vets who have died by suicide is greater than the number of those who died in battle.

Some of the earliest settlers in the nonviolent tradition were Quakers in William Penn's colony. Later colonists were greatly influenced by John Woolman (1720-1772) an itinerant Quaker preacher who traveled the colonies advocating against slavery, military conscription, and military taxes, which he refused to pay. Woolman lived and worked among Indians, and protested against the French and Indian wars. Another early activist was William Ladd (1778-

1841) who at age 20 was a New England sea captain. By the 1820s several state and local 'peace societies' existed and Ladd helped organize a national group, becoming the first president of the American Peace Society. He wrote *32 Essays on Peace and War.* Ladd saw that peace must be a world-wide movement and in 1840 proposed a plan for a World Congress and Court of Nations.

Elihu Burritt (1810-1879) the "Learned Blacksmith" continued to work at the trade he'd been apprenticed to in his youth despite his phenomenal linguistic ability. It was said he could read nearly fifty languages, including ancient Chaldaic and Icelandic. Burritt devoted himself to ending slavery and achieving world peace. He was greatly disappointed by the failure of his 1852 proposal for compensated emancipation of Southern slaves. We see now that his plan could have saved countless lives and racial conflicts that continued 150 years after the Civil War. In 1848 Burritt organized the International Congress of the Friends of Peace, the first model for the League of Nations and United Nations.

Henry Thoreau, a more famous pacifist and abolitionist, was contemporary with Burritt. True says that Thoreau's central insight is that it is apathy and indifference on the part of the many which allows the existence of social evils such as slavery and imperialist wars. Another Burritt contemporary was Adin Ballou, Unitarian minister, pacifist, and abolitionist, whose writings influenced the great Russian author and pacifist Leo Tolstoy. While these men are neglected by the school books, other pacifists are best known for other reasons. Helen Keller (1880-1968) is famous for the dramatic story of how she learned to communicate despite being deaf and blind, but we have forgotten that she was also a pacifist, suffragette, and radical socialist. Similarly, remembrance of Martin Luther King, Jr. is associated solely with his civil rights achievements but his opposition to the Vietnam War and economic injustice are glossed over.

The nation has also buried knowledge of Jeannette Rankin, the first woman elected to Congress and a life-long pacifist who voted against entry into both World War I and World War II—the only member of Congress to vote against the latter.

The tradition of Christian anarchism is based on the four Gospels and a desire to return to the practices of nonviolence, simple living, equality and freedom of early Christianity, before Emperor Constantine merged Church and state in the early 4th century. Most Christian anarchists are pacifists. Leo Tolstoy was a key figure in modern Christian anarchism, and in the United States the Catholic Worker Movement founded by Dorothy Day and Peter Maurin in 1933 is still providing help to the poor and homeless through hospitality houses, and still publishing *The Catholic Worker* at a penny a copy to promote pacifism and social justice.

Peace Churches: Religions in general espouse peace although some have been part of religious wars. Churches usually support their own nation-state in conflicts with other nation-states. However, some religions put nonviolence at the very center of their faith. The historic peace churches are three Christian denominations with a long tradition of pacifism: Church of the Brethren, Mennonites, and Society of Friends (Quakers). Other Christian churches have also taken pacifist positions since their founding, such as the Amish, Hutterites, and other Anabaptist groups, Bruderhof Communities, Moravians, and other smaller sects. Some of these churches, notably the Quakers, have also committed themselves to righting social injustices. Quakers were probably the strongest force in the abolitionist movement against slavery in the nineteenth century, and they also worked actively for women's rights. Quaker William Wilberforce recently received his due as a dedicated crusader for the abolition of the slave trade in England, with the beautifully-made film "Amazing Grace." While the film focuses on Wilberforce, several others helped him to achieve this great step forward.

Within the past decade, the three historical Peace Churches joined together to create a global organization, Christian Peacemaker Teams, that works to reduce violence and systematic injustice that lead to conflicts. Another group, The Fellowship of Reconciliation, gathers pacifist groups from within mainstream denominations. Roman Catholic popes have spoken out for peace, messages taken very seriously by some in religious orders who lead protests opposing war, weapons build-up, U.S. training camps for foreign military, and other institutions that support war. A number of U.S. priests and nuns, often elderly, have spent jail time for such protests. Unitarians, especially prominent in 19th century American history, remain outspoken for racial justice and peace.

Other world religions have their peace traditions, and for Buddhism, Jainism, Hinduism, and Bahai, peace is an integral part of their faith.

Peace Parks show the way to join peace preservation with nature preservation. About one-tenth of the world's protected wildlife areas exist along the borders of two countries. One study identifies 169 clusters of preserves, involving 113 countries. Conservationists are hoping to establish more of them. For instance, the demilitarized zone between North and South Korea could be such a wildlife refuge. Cooperative peace parks could help ensure the security of both the wildlife and the people.

The World Conservation Union in Switzerland is coordinating a huge trans-border greenbelt that would extend from the Russian-Finnish border southward through the former iron curtain countries to form bridges between various national parks and refuges. The former divide between East and West Germany is already an ecological corridor 870 miles long. Another organization promoting trans-border protected areas is the Peace Parks Foundation in South Africa.

Chapter 17
Hero Stories

There have been great societies that did not use the wheel, but there have been no societies that did not tell stories.
~Ursula Le Guin, writer of speculative fiction

We Homo sapiens have a very deep-seated need for narratives, a need which might go back 150,000 years or so to the beginnings of human language. At its most minimal a story only requires a few nouns and a verb or two. ("Og saw saber-tooth tiger. Og ran.") The origins of story might be in gossip; in campfire tales by hunters and warriors; and in the traditional tales told children to stop their crying, put them to sleep, or to teach them survival skills or tribal lore. Our three-part brain is a time capsule of our evolution from creatures largely led by instinct, to emotional creatures, then to creatures also capable of thought. A good story satisfies all three components of our psyche: the sequence of action or plot for the lizard brain, the characters and their emotional relationships for the mammalian brain; and for the frontal lobes, the theme, style, originality, and overall structure of the narrative.

Deluged with raw information and details, one may develop a story deficiency. Like a pregnant woman who must have pickles or strawberries out of season, one craves something fictional and faraway, in my case for Jane Austen or an alternate history while others prefer spy thrillers, Harlequin romances, or a favorite TV drama whose characters become like a second family. But there is a lot more to story than fictional narratives with titles. People who believe that stories are only for children fail to recognize that their news, their ideologies, their historical knowledge and even their science, all come in the form of stories. Postmodern theorists say that modern life is driven by big stories or 'meta-narratives' such as the conquest of nature by man, courtly love, the War on Terrorism, religious fundamentalism, feminism, or Reaganomics.

Human susceptibility to advertising and propaganda is related to our love of stories. After dramatic events and political changes, the first narrative devised and widely spread becomes the consensus story, and it is extremely hard to dislodge afterwards. Scary plots and villains are the stuff of conspiracy theories. Gossip is still very much with us, and in the form of stories about celebrities now dominates 'news' on the airwaves. What passes for political discussion is often gossip about political figures with horse race plots. Media present current events in the frame of 'Great Man History,' personalizing nations by their leaders. And so on.

Myth, Politics, and War

The goal of modern propaganda is no longer to transform opinion but to arouse an active and mythical belief.
~Jacques Ellul, Christian Anarchist, 1912-1994

Beyond individual stories there is mythology, a set of narratives that express the world view of a whole people. Myths explain the natural world, social customs and ideals of the people to each new generation. Certain ancestors or heroes portray the group's fundamental type, a model for all. Most of us moderns assume that myths are only ancient stories in which nobody any longer believes, but people in the industrialized world are far more susceptible to mythic thinking than they realize. Nowhere is this more evident than in patriotism and war.

Psychologist Lawrence LeShan describes how whole nations can get caught up in a "mythic reality" that replaces ordinary sensory reality with a grand narrative of Good versus Evil. Personal problems disappear and life assumes a greater meaning as one identifies with or participates in the great struggle against—whoever or whatever. One could see such a shift in world view in the United States after 9/11, from ordinary reality to mythic reality. During the Vietnam War, in contrast, television news showed some of the blood and gore of real war, lessening the jump to mythic reality, and increasing opposition to the war.

Walter Wink, theologian, claims the Myth of Redemptive Violence is the dominant religion in our society, and he traces it all the way from a 1250 BC Babylonian creation story to the cartoons that his kids used to watch on Saturday morning television. The cartoons constantly repeated the same pattern: "an indestructible hero is doggedly opposed to an irreformable and equally indestructible villain." For most of the show the hero suffers greatly and appears doomed "until miraculously, the hero breaks free, vanquishes the villain, and restores order until the next episode." Wink notes that neither party ever learns anything from these encounters. They never sit down to discuss their differences. The formula never changes.

In ancient Babylonian myth, the high god Marduk murders his mother Tiamat, the Dragon of Chaos, and from her remains he creates the cosmos. Creation itself is thus an act of violence. This basic story structure proved so popular, Wink says, that similar stories spread as far as Ireland and China:

> Typically a male war god residing in the sky fights a decisive battle with a female divine being, usually depicted as a monster or dragon, residing in the sea or abyss….Having vanquished the original enemy by war and murder, the victor fashions a cosmos from the monster's corpse. Cosmic order requires the violent suppression of the feminine and is mirrored in the social order by the subjection of women to men and people to ruler. Unquestioning obedience is the highest virtue, and order is the highest religious value.

Wink says this myth implies that our very origin is in violence, and humans are incapable of living peacefully together. Order must be imposed on them by authorities and superiors. "In short, the Myth of Redemptive Violence is the story of the victory of order over chaos by means of violence. It is the ideology of conquest, the original religion of the status quo….It is the dominant myth in contemporary America [2007]."

Such myths support attrition cultures. Modern-day belief in battles between Good and Evil also owes much to ancient religions such as Manichaeism, a major religion in the 3rd to 7th centuries from the Roman Empire to China. This posited an eternal struggle between the forces of Light and Darkness. Despite our modern technology and communications revolution, a great many of us are capable of turning to mythic beliefs and mental patterns thousands of years old.

Heroes

Peace hath higher tests of manhood
Than battle ever knew.
~John Greenleaf Whittier, American poet,

The hero (or heroine) is the model person in a given society, the person whose memes we wish we could copy. But 'hero' means quite different things to different people. We may distinguish at least nine common meanings or connotations.

First, there is the *mythic hero* who undertakes a dangerous journey on behalf of us all, or who symbolizes each human being in his or her own life journey. In myths a warrior hero often fights against adversaries, whether human, monsters, or hostile forces of nature such as ravening tigers or perfect storms. These encounters have spiritual overtones.

The *literary hero* appears in books, plays, films, and television shows. He or she is the protagonist of the story, the person with whom the reader identifies. In ancient Greek drama the hero was larger-than-life, a noble individual with but one tragic flaw that became his undoing. Increasingly, however, the protagonist accumulates so many flaws that he/she often becomes an anti-hero such as Macbeth, Becky Sharp, or Tony Soprano. You identify with the protagonist only up to a point, for you would not really want to model yourself on this person. Perhaps he or she expresses your shadow personality.

The *personal hero* is an actual individual whom we admire and use as a model. This could be an older sibling or friend, a parent, maybe a 'working-class hero,' the head of a household who goes to work day in day out, year in year out, to a mind-numbing or back-breaking job, for his or her family. Or the hero keeps going and stays upbeat in the face of severe handicaps. Christopher Reeves, the paralyzed actor who had once played the role of Superman, said "A hero is an ordinary individual who finds the strength to persevere and endure in spite of overwhelming obstacles."

There are *celebrity heroes* such as professional athletes and movie stars with whom we identify or toward whom we are attracted but usually at a fairly superficial level.

As the word is most commonly used, a hero is a person who risks life and limb, uses quick-thinking, or at least goes well out of his or her way to rescue another from immediate danger. This fifth hero is a *rescuer*, pulling drowning people out of the water or children from the burning building. Heroes might never have known they were heroes until the emergency arose.

From time to time the media creates a hero such as West Virginia soldier Jessica Lynch. Unfortunately the stories were partly based on facts made-up by the Pentagon, which Lynch later felt obliged to refute. Other recent *media heroes* are two captains. One, captain of a ship, reportedly gave himself over to teen-age Somalian pirates in exchange for his crew (he later denied this had happened). The second, an airline pilot, kept a cool head, showed concern for both his passengers and those on the ground, and most of all demonstrated the professional skills of a seasoned pilot. While I would in no way wish to detract from either man's deeds, it was the sort of thing that one traditionally expects from the captain of a vessel. Captains are chosen for that very readiness and ability to protect those within their range of responsibility.

In a militarized society, which to large extent describes the United States and especially its South, the field of heroism tends to be dominated by soldiering. From this seventh view, *a soldier or veteran of the U.S. military* is almost automatically a hero. From letters to the editor I gather that a few veterans are jealous of the prerogative and resent its application to, say, firemen, whose work involves rescues and is often highly dangerous. Militarism also gets mixed with religion, as in Christianity starting with the Roman Emperor Constantine in the 4th century, and with the birth of Islam a few centuries later. Religion and patriotism make a double claim on the soldier, glorifying his death as a martyr-hero.

Should we assume that all soldiers who fought, suffered, and died for their various nations in all the world's wars over the centuries were brave heroes? Many believed in the causes they fought for, but many did not: they were trained to kill on order. In the degrading conditions of combat life some looted, raped, or murdered civilians. The reasons for war were out of the hands of soldiers who were brought up to trust their superiors and to believe government propaganda

that the war was justified. Yet in most cases their sacrifices really were in vain; their causes were not just because war was avoidable and they were not defending their own lands. It is hard to find an example of a country which 'benefited' even from a war which it won, unless it was to get bigger, to take over somebody else's land and steal their resources. But because soldiers and vets really want to think of themselves as hero-rescuers, many have adopted the ideology that the wars in which they participated were in fact rescues, of their own or other countries.

The technological nature of modern war and the fact that civilian deaths greatly outnumber battle casualties (by about nine to one) make it increasingly hard to make the case that soldiers are automatic heroes. In addition, mercenaries outnumber soldiers in current U.S. operations in Iraq and Afghanistan-Pakistan. The latter increasingly resembles a covert or corporate war. It is difficult to make a hero out of a CIA operative who directs a Predator or Reaper drone by remote control from Virginia to a mud hamlet where "suspected terrorists" are living. Many civilians including children are killed in such attacks. According to the *New York Times*, "Some legal scholars have questioned the legitimacy under international law of killings by a civilian agency in a country where the United States is not officially at war."

Besides uniformed soldiers fighting for nation-states in wars declared by governments, *quasi-military heroes* take part in insurrections, guerrilla movements, and militias. They may fight for independence from a nation-state or join peasant rebellions against oligarchs; they belong to repressed minorities struggling for equitable treatment or are motivated by religious or political ideologies. Some fight for the highest ideals; some are in predatory groups that fight and compete against others much like themselves in a chaotic region with weak government. Some use terror tactics. In any case they do not wear the uniform of a nation-state and do not represent any of the almost 200 nation-states which alone reserve the right to use organized violence.

Yet each beleaguered group recognizes certain people as heroes for their cause. Even Osama bin Laden was a hero to some although an evil figure to most in the West. Whether Che Guevera or Michael Collins or the Basque nationalist Yoyes (Dolores Gonzalez) is a heroic figure depends on your political orientation. Consider Bob Doyle, an Irish nationalist. He joined the Irish section of the International Brigade fighting for the Spanish Republic (1936-1939) after that elected government was attacked by right-wing forces supported by Nazi Germany and Fascist Italy. When Doyle died in 2009, people filled the streets of Dublin and treated him like a hero.

Our ninth form of hero may be the person who sacrifices a great deal, sometimes life itself, for a principle, or for the greater good. (In the words of Mr. Spock, "The needs of the many outweigh the needs of the few.")

Hero, Soldier, or Warrior

The true warrior always goes armed with three things: the radiant sword of the peace-bringer, the bright mirror of wisdom and friendship, and the precious jewel of Divine light. That Divine light is not in heaven or on Earth; it is inside each one of us.
~Morihei Ueshiba, 1883-1969, founder of martial art Aikido

There is confusion between three words which represent somewhat different models for manhood (though women too can be heroes, soldiers, or warriors). You recall Robert Greene's description of attrition cultures which focus on how to overpower problems, obstacles, or people who resist them (enemies) and which honor the warrior-hero who performs this task. Drawn to the dramatic aspects of confrontation, they tell stories leading to "battle-like moments." Their

stories often include a moral message based on good-and-evil polarity. This has been a dominant mode of stories in attrition cultures in the West, and it glorifies aggressive action.

But here we must distinguish between two connotations of the term 'aggressive' which according to the dictionary means "inclined to behave in a hostile fashion"—but it also can mean "assertive, bold, and enterprising." Readers will pick up the different meanings from the context. The fact that humans have aggressive energy—evident on every playground—does not mean that we are born to aggrandize or to kill each other or that war is inevitable. The positive side of this energy gives determination and drive to, for instance, protect the environment. We need a new English word to describe this active, forward, creative energy (similar to *yang* in Taoism) since the word 'aggressive' has attrition-culture connotations of trying to overpower others. +++

We also need to better define the 'warrior' and to distinguish this person from the soldier. There are ways other than war and violence to be a warrior and for a cause larger than national patriotism. Because of this confusion, some think of warrior-energy as a primitive and dangerous throwback, something the human race could well do without. However Robert Moore and Douglas Gillette (*The Warrior Within)* insist that the warrior archetype is hard-wired into our brain structure, both men and women, and attempts to banish aggressive (*yang)* energy only send it underground with unhealthy results. It can't be wished away but must be realistically managed instead. Moore and Gillette add that we moderns have lost some of the ability to manage our aggressive (*yang*) energy, that patriarchy and 'macho' societies are not expressions of mature masculinity, and that the loss of initiation rituals for adolescent males means that many modern men do not become fully mature.

Theologian Matthew Fox says the key that turns aggression into nobility is to understand the difference between a warrior and a soldier. He recalls a Vietnam vet who had volunteered for duty at age 17, but found that in the army he became "a puppet." The vet stopped being a soldier and became a warrior when he started protesting the war and went to jail for it. Fox says the man was then following his soul's orders, not his officer's. Fox describes the warrior as "the mystic in action" and gives four steps or ways to become a spiritual warrior: the celebration of life, the facing of death and emptiness (letting go), creativity that comes from a wellspring of wildness, and the tests of discernment, compassion, and justice.

Thomas Berry, Catholic priest and eco-theologian, says that we now need real warriors for "The Great Work" which is "the task of moving modern industrial civilization from its present devastating influence on the Earth to a more benign mode of presence." In this, in peace-work, and in many other ways one can be a *warrior for the human race.*

While patriotism's concern for others stops at borders on a map, one can also be a *warrior for humanity*, for instance rescuing people during natural disasters which scientists predict will become more frequent in the future due to climate change. Humanitarian workers often find themselves in the middle of difficult and dangerous work trying to help people caught in the middle of armed conflicts. Or a warrior for humanity may be devoted to improving the lives of abused children, the mentally ill, or another injured group.

In each of many genocides over the past century some individuals have risked much, including their own lives to save members of the "enemy" population. Sometimes these heroes rescued hundreds, even thousands of the intended victims. Because of the film "Schindler's List," Oskar Schindler is the best-known such rescuer in the Holocaust but there were many others such as Raoul Wallenberg, a Swedish diplomat who saved tens of thousands and as many as one hundred thousand Jews in Hungary during the Nazi occupation.

Paul Rusesabagina, manager of "Hotel Rwanda," in the capital city of Kigali, sheltered over 1,000 Tutsis and moderate Hutus during the 1994 massacre by Hutu militias. Rusesabagina has said "I have learnt since I was a young boy to listen to myself. I always call my conscience my own adviser who will never confuse right to wrong or wrong to right." Another such hero is Rwanburindi Enoch who with his wife invited severely injured Tutsis to stay at his home and then built another home on his property to shelter more of them.

There are *warriors for the truth* who may be journalists and photojournalists living in danger in order to witness and report to the world. They may be whistleblowers. A truth warrior might be an unknown scientist who dedicates himself or herself to discovering one small piece of the world puzzle.

Like Gandhi or Martin Luther King Jr., *warriors for justice* may lead or join a struggle for greater freedom and living conditions for the wider society. Several connotations of the Islamic word *jihad* refer to internal spiritual struggle, working for a better social order, or to nonviolent resistance to oppression, and not only to 'holy war' as so often translated in the West. Some acting in the Arab Spring were inspired by words of the Prophet Muhammed "The best Jihad is the word of Justice in front of the oppressive Sultan [ruler]."

One can also be a *warrior for the planet*, protecting other species, ecosystems, and landforms. John Muir and David Brower were among those who have fought to preserve wilderness. Muir saved Yosemite, Sequoia National Park, and other precious wild places for posterity. He is known as the Father of the National Parks. David Brower, among his many struggles, prevented the building of two dams that would have flooded much of the Grand Canyon. The Cree people prophesied that "When the Earth is sick/The animals will start to disappear/When that happens/The warriors of the Rainbow will come to save them." This prophecy has already begun to manifest, as many individuals and groups act to save animals, forests, habitats, and ecosystems. Greenpeace named two of its ships the Rainbow Warrior.

A planet-wide community of people has developed to protect the survivors of threatened species. In particular, a number of strong and determined women scientists dedicate themselves to saving the world piece by piece, species by species, and ecosystem by ecosystem. The first and best-known of these Rainbow Warriors is Jane Goodall, who lived for many years among the chimpanzees of Gombe National Park in Tanzania, studying their social interactions and befriending their species (and all species).

Another notable species protector was Dian Fossey, who lived with and studied the mountain gorillas of the Rwandan jungle. Seeing the gorillas faced with extinction, Fossey publicized their plight and developed aggressive anti-poaching measures that may have led to her mysterious murder. But her actions did help save the mountain gorillas from extinction. (The 1988 American film "Gorillas in the Mist" was based on Fossey's life.) German-Canadian Birute Galdikas, along with Goodall and Fossey, is one of "Leakey's Angels," three primatologists inspired and mentored by the famous anthropologist Louis Leakey. Galdikas has studied the endangered orangutan in the wilds of Borneo since 1971, rehabilitates orphaned orangutans, and is a well-known advocate of conservation.

A younger generation of women defending species and ecosystems includes Krithi Karanth, protector of tigers in India's national parks; Devra Kleiman, defender of the golden lion tamarin, an endangered Brazilian monkey; Leelah Hazzah, an Egyptian American who persuades people in rural African villages to become lion guardians rather than lion hunters; and Enriqueta Velarde, who devotes herself to Isla Rasa in the Gulf of California. Rasa is a small island of 138

acres yet one of the most important seabird breeding islands in the world, home for half a million birds some of which only nest here.

There is yet one more way to be a warrior. It is based on man against himself (or woman against herself), a story which is not only about the spiritual struggle in each of us between higher and lower motives but also about the spiritual evolution of the species as a whole.

Peacemakers

It is the acid test of nonviolence that…there is no rancor left behind, and in the end, the enemies are converted into friends.
~Mohandas Gandhi, 1869-1948

The history we learned in school was heavy with battles and wars, tyrants and empires. (Those are the stories that appeal most to the reptilian brain.) We hear a great deal about the heroes and glories of wars but not nearly enough about peacemakers and traditions of peace. Yet, both in world history and in the American experience, there have been many peacemakers. World-wide, their stories demonstrate the great courage and inventiveness required to prevent wars or stop them. Many of their stories are just as dramatic as the repetitive struggles for power.

Some peacemakers help end grave social injustices and others build bonds of friendship among peoples. Others deal with the aftermath of war and reconciliation. While Mahatma Gandhi and Martin Luther King, Jr. have made their mark on history, there are many less-known stories of other courageous people, heroes of nonviolence and peacemaking. Around the campfire, we might listen to stories about some of the peacemakers you don't yet know.

Fridtjof Nansen (1861-1930)*,* a Norwegian who has been called the Peacemaker of the Twentieth Century, is all but unknown in the United States. Nansen was a 'universal man:' a great zoologist and oceanographer, athlete, statesman, humanitarian, and a daring explorer, performing exploits such as skiing across the Greenland icecap. Although risky, his explorations were carefully planned.

In 1905 his native Norway began leading up to a war with Sweden, from which it wanted full independence. Nansen then devoted full time to diplomacy and succeeded in getting the parties to sign a treaty that stopped the impending war and separated the two nations. Norway and Sweden have not had any serious differences since. Such was the respect that Norwegians had for Nansen that he was asked to become Norway's first prime minister and some secretly asked him to become either president or king, once the new form of government was decided. Nansen declined all these offers, saying that he was "a scientist and explorer."

Nansen's next gift to humanity occurred after World War I, when hundreds of thousands of prisoners of war were stranded, many in Siberia where they faced death from the oncoming winter. The POWs could not get home because of the general chaos and destruction. The newly organized League of Nations appointed Nansen to work on the problem. He raised money, food, and medicine, persuaded a number of governments to cooperate, and arranged transportation so that about 450,000 men could return to their homes in twenty-six countries.

Meanwhile, two million civilian refugees from the Russian Revolution and counter-revolution were homeless in Europe, without papers, passports, or official identities. No government wanted them. The League of Nations asked Nansen to coordinate all the relief organizations. He created a new international identity card and convinced fifty governments to honor the Nansen Passport.

Nansen also resettled several hundred thousand Greeks and Turks who fled to Greece in 1922 after the Turks defeated the Greek Army. In still another relief effort, Nansen attempted to aid the 20 million people threatened by famine and disease after a crop failure in Russian grain-growing areas such as the Ukraine and Volga. But the League of Nations would not finance aid for a Communist country, so Nansen made fund-raising tours and raised money himself. Although he did not raise enough to save all those who were starving, still, he saved many lives.

In 1922 Nansen received the Nobel Peace Prize. Biographer Tamim Ansary says "This one man probably saved a million lives and made happiness a possibility for millions more."

Native American Peacemakers: Deganawidah. Native Americans had peacemakers as well as fighting warriors, but as James C. Juhnke notes, American history depicts the notable Indians as military heroes such as Pontiac, Tecumseh, Geronimo, and Sitting Bull, seen as foils to the white conquerors. Yet despite repeated devastation, from the "double holocaust" of disease and then of organized warfare and ecological destruction on the frontier, Native American culture survived and drew on traditions of peace that had existed before the Europeans arrived.

One such tradition was the Iroquois "League of Peace" that is believed to have begun in the early 1400s with an extraordinary leader and prophet, Deganawidah (The Master of Things). He was a Huron by birth, adopted into the Mohawk tribe. Tradition said he had magical powers as well as political wisdom. Deganawidah came from the north at a chaotic time when the five Iroquois peoples were making war on each other in tribal and personal violence. Some even resorted to cannibalism. Many distraught people had fled their villages and cornfields for a miserable existence in the woods, but Deganawidah brought hope and new teachings about peace, cooperation, justice and the rule of law.

The new leader chose and converted three key persons from among the five Iroquois tribes, one a female chief, Jigonhsasee, who became the "Mother of Nations." In the new way of life, women could be chiefs and would name the new chiefs. Another person whom Deganawidah chose was Hiawatha, who had been deeply steeped in the violence but now became Deganawidah's messenger and spokesperson. The third was a great wizard and formerly evil power, Atotarho, who was named as "Head Chief of the Five Nations." Thus Deganawidah converted this powerful person's energy into a positive direction. Juhnke recounts:

> An early task for the chiefs' council of the new League was disarmament. At Deganawidah's suggestion, they uprooted a great pine tree and threw all of their arms into the hole. Then they replanted the tree, "thus hiding the weapons of war forever from the sight of future generations." The pine tree was a great symbol of unity.

Lala Aziza, a Muslim Female Saint. In the fourteenth century, near the Atlas Mountains of southern Morocco, lived Lala Aziza, "Our Lady of Goodness." She was one of the *awliya'* or "friends of God." In 1362, a famous religious scholar, Ibn Qunfudh, traveled through Morocco and described his encounter with her:

> I saw, in the farthest part of Morocco, Aziza the woman of Seksawa. She blessed me with her goodness. I studied with her awhile [and] saw her reconcile a conflict between two great groups of people in the region. She was a teacher and had a number of followers, both men and women; they were involved in worship and in search for the divine. I never saw her but that she was doing good. She is filled with God's generosity.

Aziza is most remembered for a remarkable act of peacemaking. Al-Hintati, a powerful general and governor of Marrakesh, set out with 6,000 men to conquer Seksawa just as he had already conquered most of southern Morocco. When he drew near, Aziza walked out of the foothills alone and confronted the general and his army. As recounted by M. Elaine Combs-Schilling, "She spoke of God's demands for justice, the pull of the good, the wrong of harming God's creation." In fact, she talked the general out of his intended conquest with the power of her faith and goodness. The people of Seksawa did not have to suffer a war.

People have told the tale of this confrontation for six centuries, and during this time Aziza's tomb has been a *hurum* or sanctuary where all violence is forbidden, even the killing of an insect or breaking of a branch. It is a refuge for people fleeing political confrontations and false accusations. Local people feed those who seek sanctuary and try to resolve their conflicts.

The area around Aziza's tomb is also a space for mediating the relations between women and men. Seksawa women have long held more rights than women in nearby territories. They have the right to equal pay for equal work, equal divorce rights, and rights to half of the marriage goods should there be a divorce.

Leymah Gbowee is a Liberian woman who led her countrywomen in an effort to stop the devastating civil war between a corrupt dictator, Charles Taylor, and warlords battling against him. This 14-year conflict had killed 200,000 people and made a third of the country homeless. Children were conscripted and rape was a regular occurrence. Gbowee, an uneducated 'market woman,' led a group of women who forced a meeting with President Taylor and got his promise to attend peace talks in Ghana. Then Liberian women went to Ghana to apply more pressure on the warring factions. By various tactics including disrobing to shame the men pursuing this civil war, and a sex strike, the women achieved their goal of peace in Liberia.

The empowerment of Liberian women eventually led to the election of Ellen Johnson-Sirleaf as President of Liberia, the first female head of state to be democratically elected anywhere in Africa. Leymah Gbowee is a strong and charismatic figure (as she appeared on a PBS program) and is now the executive director of the Women Peace and Security Network Africa, based in Ghana. She is working to empower women in Africa and beyond. An award-winning documentary film, "Pray the Devil Back to Hell," is based on this successful struggle for peace.

It may sound like something out of an old Greek play ("Lysistrata" by Aristophanes) but women in several countries have successfully used the tactic of withholding sex in order to secure peace. The women of Dado village in the Philippines held a sex strike in the summer of 2011 in order to stop family feuds and land disputes. A group of women had set up a sewing business but could not deliver their products because the village road was closed by threats and sporadic shooting incidents. That's when the women conceived their idea—and it worked, too.

In 2006 the wives and girlfriends of gang members in the Colombian city of Pereira began a sex strike after a wave of 480 killings. The protest was called "La huelga de las piernas cruzadas"—the strike of crossed legs. The women wanted gang members to turn in their weapons in compliance with the law. Pereira's mayor supported the campaign, and by 2010 the city's murder rate was down by 26.5%, the largest decline in crime of any city in Colombia.

In Kenya, after a 2009 election, women's activist groups imposed a week-long sex ban on their partners, inviting prostitutes and officials' wives to join them, to protest infighting in the government. After only one week, a stable government was formed.

Two Soviet Heroes Who Saved the World: Twice during the Cold War a catastrophic nuclear exchange was averted by Soviet military men who resisted pressure to deploy nuclear weapons. The man who was part of the first incident, naval officer Vasili Arkhipov (1926-1999) had already been involved in another highly dramatic series of events depicted in an American feature film in 2002: "K-19: The Widowmaker". In 1961 Arkhipov was the executive officer on a test run of K-19, the Soviet's first ballistic missile sub, a ship that had been plagued by accidents and deaths even during its construction. In the North Atlantic the crew had to devise some way to prevent a threatening nuclear meltdown. Despite some questionable decisions by his commander, Arkhipov backed him during an incipient mutiny and received a dose of radiation during the reactor accident, but a meltdown was averted.

A year later we find the Cold War is at its most dangerous point: the Cuban Missile Crisis, a thirteen-day period in October, 1962 during which the world came close to starting World War III. The United States, with more than eight times as many bombs and missile warheads as the USSR, has deployed 15 Jupiter IRBMs at Izmir, Turkey, 16 minutes from Moscow. This first strike capability upsets the balance of M.A.D. (Mutually Assured Destruction) the supposed policy of both superpowers. In a counter move, Soviet leader Nikita Khrushchev secretly installs medium and long range nuclear missiles in Cuba, capable of hitting most of the continental United States. He also sends a flotilla of four nuclear-armed attack submarines. Arkhipov is again second-in-command of a nuclear submarine, B-59, but is also Commander of the flotilla.

Kingston Reif says many moments during the Cuban Missile Crisis could have escalated into full-blown nuclear war. There were several aspects of the situation that Kennedy and Khrushchev did not know about and could not control. For instance, the Americans did not know that the Soviet submarines were nuclear armed. Probably the most perilous moment of all took place on October 27, when Reif relates:

> A Soviet submarine commander, under barrage by US depth charges, believed war between the Soviet Union and the United States must have already begun. He prepared to fire the nuclear-tipped torpedo. However, authorization to fire the torpedo required assent from the three officers on board. Two officers were in favor of launching the torpedo—fortunately, one was not. *One.*

The one, the holdout was Vasili Arkhipov. Thomas Blanton, then director of the National Security Archive said in 2002, "a guy called Vasili Arkhipov saved the world." Arkhipov's role was not known at the time and is still not widely known.

And then another second Soviet military officer 'saved the world'. It was another period of heightened tensions, the beginning of provocative NATO military exercises and not long after the Soviets had shot down an off-course South Korean airliner. Lieutenant Colonel Stanislav Petrov's duty was to monitor satellite surveillance equipment and report warnings of a U.S. missile attack to his superiors. In the event of an actual attack, they would launch an immediate nuclear weapons counterattack against the United States. With only a few minutes to decide, the top leadership would most likely order a retaliatory strike.

On September 26, 1983 Petrov was standing duty when the alarms began to go off, indicating the launch of five missiles. There had been doubts in the past about the reliability of the satellite system. Wouldn't the enemy have sent more than five missiles? According to Glen Pedersen of the Washington Post Writer's Group,

Even though Lt. Col. Petrov had a gnawing feeling the computer system was wrong, he had no way of knowing for sure. He had nothing else to go by. The Soviet Union's land radar was not capable of detecting any missiles beyond the horizon, information that by then would be too late to be useful. And worse, he had only a few minutes to decide what to tell the Soviet leadership. He made his final decision: He would trust his intuition and declare it a false alarm. If he were wrong, he realized nuclear missiles from the United States would soon begin raining down on the Soviet Union.

Events proved Petrov's decision to report a false alarm was correct, but he had disobeyed military procedure by not notifying his superiors, making him 'unreliable.' Petrov was interrogated relentlessly and soon retired from the military. Some sources say he suffered a nervous breakdown. Ironically, Petrov was not originally scheduled to be at his post that night. Another commanding officer might have reported the alarms as genuine—leading to a nuclear holocaust.

The Danes, the Jews, and the Physicist: In the fall of 1943 German ships waited in the Copenhage harbor to transport Danish Jews they intended to round up. Secretly warned by a German diplomat, Georg Herman Duckwitz, the Danish resistance movement helped Jewish families leave Copenhagen for coastal villages. Danes then smuggled out about 8,000 Jewish compatriots in fishing boats, rowboats, and kayaks. The motley fleet took rescued Jews across the Oresund Sea to neutral Sweden. But there, King Gustaf of Sweden hesitated to take them in, fearing Nazi retaliation. Sweden, the only Scandinavian country not occupied, had previously turned away the Norwegian Jews. However, the famous Danish physicist Neils Bohr was hiding in Sweden, and insisted that the Jews be saved. Bohr sent word that if the Jews were not publicly granted asylum, Bohr would surrender to the Nazis himself. The king immediately granted asylum. About 99% of Denmark's Jews survived the Holocaust.

Part Five: Transformation

"Free will was probably a bad idea," He said. He was sitting in his throne, gazing into a computer terminal of 20ᵗʰ century manufacture.

Gabriel looked up from his harp. "What makes You say that?" he asked.

The Lord spoke a few words and the display froze, blanked out, then returned a single screenful of information:

> Decisions favoring mankind: 1.32×10^{12}
> Decisions hindering mankind: 3.78×10^{12}
> Decisions of no consequence: 2.96×10^{13}
>   Enlightenment index: 23.54 (down 2.60)

~Jerry Oltion, "In the Creation Science Laboratory," *Analog*, September, 1987

This excerpt from a satirical science fiction story notes that Humanity would have a much better chance of survival and thrival if the enlightenment index went up. We would need to cut down drastically on two kinds of decisions: those of no consequence—such as which breakfast cereal to buy—and those hindering mankind, decisions which so often follow from ideological assumptions and false notions.

With all the extra time, energy, and resources saved from pointless and destructive choices, we can then focus on decisions favoring the survival of our species. Some possibilities follow.

Chapter 18
Goodbye, Bad Old Memes

You have sat too long here for any good you have been doing. Depart, I say, and let us have done w'you. In the name of God, go.
~ Oliver Cromwell, dissolving the Long Parliament 1653

We have previously described memes as actions or ideas or bits of ideas imitated over and over. We're largely unaware how much of what we do comes from simple imitation of ancient notions rather than well-reasoned principles. Take for instance the idea of obedience. A medieval Spanish monk wrote in his diary: **"**I am confident that, after my death, I will go to heaven because I have never made a decision on my own. I have always followed the orders of superiors, and if ever I erred, the sin is theirs, not mine." This poor man carried the virtue of obedience to the end point of abdicating his own humanity.

Some ideas and activities, such as total obedience to superiors, persist long after they have outlived their usefulness—assuming that they ever were useful. Memes should include a sunset provision. Let's look at specific memes that need to retire. Here's one that even has a birthday—it was invented in 1947. U.S. Navy Admiral Gene La Rocque said in a PBS documentary:

> The National Security Act of '47 gave us the National Security Council. Never [before] have we had a National Security Council so concerned about the nation's security that we're always looking for threats and looking how to orchestrate our society to oppose those threats. National Security was invented, almost, in 1947, and now it has become the prime mover of everything we do as measured against something we invented in 1947.

'*Red in Tooth and Claw*,' or the belief that competition is the law of life, is another meme of dubious benefit to the human race. The phrase appears in a poem by Alfred Lord Tennyson in 1850, several years before Charles Darwin published *On the Origin of Species* (1859), so it was not a direct reference to the idea of natural selection. Regardless of the merits of the poem or the metaphor, the *meme* gives a false perception of Nature based only on the predator/prey relationship and not the cooperation and interrelationships that also characterize Nature.

   The poetic image became fastened to natural selection along with the phrase "survival of the fittest" which was invented by philosopher Herbert Spencer and has been associated with Social Darwinism. In the United States, competition is over-emphasized for instance in education, and it helps drive consumerism and an aggressive foreign policy.

   One example of a heedless meme is the *Lawn,* which Permaculturist Bill Mollison calls the "number one agricultural product in the world." Australians as well as Americans imported this grassy landscape from the great houses and village greens of 17th and 18th century England and France. But those original lawns in a different climate did not need watering or require pesticides and they were grazed by sheep, not 2-cycle gasoline mowers.

   Few Americans had lawns a century ago. Virginia Scott Jenkins says that the new tradition that every home must have a lawn was sold to people especially after World War II by the USDA, Garden Club of America, golf associations, realtors and developers, and manufacturers of lawn maintenance equipment (now a $40 billion industry). The perfect lawn became a symbol of middle-class family values and civic duty, as well as personal pride and an arena of competition between neighbors. In the United States there are now about 58 million home lawns covering at least 20 million acres, also 16,000 golf courses, and 700,000 grassy athletic fields.

   Here are consequences of what some call our obsession with lawns. Power mowers use 800 million gallons of gasoline a year. The average mowing machine emits an estimated 87 pounds of CO_2 annually. According to the EPA, mowers contribute five percent of U.S. air pollution, including carbon monoxide and other hydrocarbons and nitrogen oxides that create smog. Historian Ted Steinberg notes that "using a power lawn mower for one hour spews as much polycyclic aromatic hydrocarbons into the air as driving a car 93 miles." He adds that about 75,000 Americans are injured every year while using lawn mowers. OSHA considers ground maintenance a dangerous occupation such as working in steel, concrete, or shipbuilding.

   Another problem is pesticides and fertilizers. A site from Purdue University says that 67 million pounds of synthetic pesticides are used on U.S. lawns each year. Much of it is wasted and ends up contaminating our water supplies. Americans buy over five billion dollars worth of fertilizer for their lawns, and again, the majority of this is wasted and becomes a source of water pollution. Also, commercial fertilizer is derived from fossil fuels.

   The third major drawback to lawns is the amount of water consumed. The Purdue site says that between 30 to 60 percent of all urban fresh water is used to water lawns, with more than half of this wasted because of inappropriate methods, timing or amounts. We have all seen precious water running down the street because somebody forgot to turn the faucet off, or sprinklers revolving merrily in the middle of a rainstorm.

   The following suggestions come from Purdue and other sources. First, electric or four-stroke gasoline mowers reduce pollution. One can eliminate pollution entirely with hand mowers that also provide aerobic exercise. The lawn industry promotes hatred of weeds—anything that isn't grass—but clover actually increases the health of lawns. On the other hand, global warming may

make some weeds almost impossible to eradicate. According to the *Los Angeles Times*, dandelions and poison ivy among others will grow much better with increased CO_2 levels.

Homeowners can also choose varieties of grass suited to their bioregions. Steinberg notes that people across the United States plant Kentucky bluegrass, native to colder areas of northern Europe. It is especially unsuited to the arid West. One could instead choose tough grasses such as Buffalo grass that are especially drought or disease resistant and don't need much or any mowing. Also, Integrated Pest Management (IPM) greatly reduces the need for pesticides, and drip irrigation systems do not waste water as sprinklers do. +++

There are more revolutionary strategies. Native landscaping uses species of plants indigenous to one's bioregion, including wildflowers. Native plants tend to be hardier and to require little attention. Such a plan may also involve *Xeriscaping* in dry areas, selecting species that require a minimum of watering. Las Vegas pays homeowners to replace lawns with native plantings, and during a protracted drought, the East Bay Municipal Utility District (San Francisco) gave customers "cash for grass" if they removed their lawns. +++

One family may replace the lawn with ground covers, while another designs a landscape composed mainly of patterns of stones, like some Japanese gardens. Perhaps the popular choice during this economic downturn will be to plant one's front yard in a garden of edible plants, like the victory gardens of World War II. This may require organizing to change the rules of HOAs and to repeal outdated city ordinances. The Obama family has already planted a good sized vegetable and herb garden, with a few berry bushes, on the White House lawn.

Related to the lawn meme are two other long-held symbols of virtuous activity: clearing the underbrush and draining the swamps. The U.S. Forest Service helps promote the notion that an ideal forest is composed of mature trees 20 or 30 feet apart without a bunch of nasty brush to hinder one. But this vision is a park, not a forest. That rejected brush includes the young trees of the next generation, and also shelters much of the wildlife. As for the ancient prejudice against swamps—some of which, it is true, once harbored malarial mosquitoes—they are now known as wetlands and we have come to understand that they perform vital services in the ecology, serving as flood prevention, water pollution control, hydrological stabilizers, and habitat for wildlife. As an old German proverb says, "Where there are no swamps there are no frogs."

White Foods: Refined sugar, white flour, and white rice have largely replaced their predecessors despite the fact that molasses, whole-grain flour, and brown rice have much more food value. Indeed, the refined white products have been linked with various deficiencies and diseases, from beriberi to cancer. So why did they ever become the universal standard? Some of it was undoubtedly status-climbing by the new 19th century middle classes. If you are well-bred and refined, then of course you eat refined foods. Some unconscious racism may have been involved. While the word 'black' has some negative connotations connected with fear and evil, one may also ponder some bad associations with 'white' such as bones, maggots, corpses, and ghosts. People 'turn white' when they faint or are terrified. White is the color of mourning in many Asian countries. It is not far-fetched to associate denatured foods with death.

Brown rice takes a little longer to cook but it has a pleasing, nutty taste. I wonder what it would take to get East Asian restaurants to carry it, at least as an option. Many stores carry whole-grain breads and other products, as well as milled flours, and some people grind their own wheat berries, millet, or barley for greatest freshness. A number of natural sweeteners from honey to stevia can replace refined sugar, but probably the best choice is to learn to eat fewer sweet foods, and then mostly in the form of natural fruits. Our ancestors' bodies did not evolve

to eat large quantities of sugars in any form. Nutrition writer Michael Pollan and others warn against high-fructose corn syrup as well as artificial sweeteners such as aspartame or splenda.

People tend to eat too much salt (another white food) and processed foods contain a lot of salt, often to cover up the lack of taste. White hydrogenated fats (shortening) are already on their way out of the modern diet in favor of olive oil and other non-hydrogenated oils.

NATO, To Be or Not to Be

NATO creates threats wherever it goes. That is its business….NATO is a protection racket.
Diana Johnstone, "NATO, Strasbourg and the Black Block"

The North Atlantic Treaty Organization recently celebrated its 60th birthday. NATO began in 1949 at the beginning of the Cold War between the United States and U.S.S.R. Its unstated purpose was to contain Soviet Russia. The main members at first were the United States, UK, and France. After the Cold War ended in 1990, NATO cast about for another reason for being, and began to expand to countries in Eastern Europe although Mikhail Gorbachev claimed that the United States under President H.W. Bush had promised not to do that. Today NATO has 28 members including most European countries (not Austria, Finland, or Sweden) and Canada, but the United States is without doubt the most powerful of these. The combined military spending of NATO members is 70% of the world's outlay.

While its member states own about three-fifths of the global nuclear arsenal, NATO maintains its own nuclear weapons and reserves the right to use them. It has used DU (so-called 'depleted uranium') weapons and anti-personnel cluster bombs and continues to stockpile them. A frightening plan drawn up by former armed force chiefs from the United States, Britain, Germany, France, and the Netherlands would 'reform' NATO basically by giving more decision-making to the generals and less to the participating countries. The same document says "The first use of nuclear weapons must remain in the quiver of escalation as the ultimate reason to prevent the use of weapons of mass destruction." This sounds to me like Orwell's doublespeak.

The first reason to dissolve NATO is that it has outlived the purpose for which it was formed. The Cold War ended two decades ago. Rodrigue Tremblay, professor emeritus of economics at the University of Montreal, notes that "redundant institutions have a life of their own" and when their original purposes no longer exist, they invent new ones.

A second reason is that not only do NATO's core members produce most of the world's military equipment and maintain most of its nuclear arsenal; they also have a history of imperialism. One could say that imperialism continues in the form of corporate globalization.

Third, in looking for reasons to exist and expand, NATO increases military expenditures by its member countries and it creates world instability. Some believe that the ethnic wars in the Balkans were fomented by NATO to justify its own military intervention there. Chomsky points out that not only was NATO bombing Serbia illegally, but leaders were aware that the bombing would greatly increase the number of atrocities on the ground. The commanding general, General Wesley Clark, informed Washington and the media beforehand of this likely result. During the same period, NATO member Turkey was committing worse atrocities against its Kurdish population using, Chomsky says, "massive US aid."

Professor Tremblay says, "Maybe the world should be worried about those who go around the planet with a can of gasoline in one hand and a box of matches in the other, pretending to sell fire insurance."

The organization is expanding into central Asia, and NATO membership has been suggested for Israel, Japan, Australia, and New Zealand. The expansion of NATO may provoke an anti-NATO alliance in Asia, and start a new arms race in missile defense technologies. Tremblay says that NATO's transformation into a world-wide, offensive military organization led by the United States will have profound geopolitical consequences for Europe, which has important economic links with Russia. Not only is Russia left out of NATO but it is encircled by NATO and U.S. puppet states or subsidized allies.

The direction in which NATO expansion is headed is pinpointed in a 2007 conference paper by Major Thomas S. Mowle, associate professor of political science at the USAF Academy, who says: *"NATO's evolution to include global partners suggests that NATO may effectively supplant the UN as the focus of international action."* Mowle finds NATO is more successful than the UN "because its leadership is more focused, it no longer requires common participation by all members in all actions, and it can be selective in its membership."

Well yes, of course. A well-funded military machine representing economic interests of the United States and allied powers in corporate globalization would be more 'successful' in following the U.S. lead than a more democratic and inclusive organization, minimally funded, and either manipulated or barely tolerated during the Bush Administration. After all, Mussolini did make the trains run on time.

Perhaps those people who worry about the New World Order being imposed by the UN, the Illuminati or reptiles from space could take a closer look at NATO, and join the effort to dissolve it. NATO is a structure that definitely should have had a sunset provision. The longer it is left to self-aggrandize and the bigger it gets, the harder it will be to dismantle, so let's start right away.

In May, 2012 NATO held a summit meeting in Chicago about ending the war in Afghanistan. Congressman Dennis Kucinich said that the talks were not really about ending the military action but "simply about financing the next phase of the war." The summit was protested by thousands of protestors organized by the Coalition against NATO/G8 and Midwest Anti-War Mobilization which included an active contingent of Iraq war veterans. This was the first large-scale demonstration against NATO.

Chosen People, Whether Anglo-Saxons, Jews, Christians, Japanese, Would-be Aryans, Americans, or the Meritocracy: The idea that one group of humans was in some sense chosen by God, evolution, genetics, or history over all others has nothing to support it except the force of collective egotism from that group. It often implies a 'manifest destiny' and is then used as a justification for imperialism and conquest such as the British Empire or the Third Reich.

Jews are a special case here, as their status as chosen people was not accompanied by imperialistic tendencies for several thousand years during which they had no territorial base from which to attempt any land-grabs and only recently found themselves in this position. Many Christians from Ferdinand and Isabella of Spain to the latest armies of Dominionism not only believe that they are chosen but that they are doing a magnificent favor to the people they convert by the sword or otherwise.

Americans are also a special case because public rhetoric often assumes that they/we are a chosen people (American exceptionalism) but our citizens don't generally use that term and might be shocked by it. Also, Americans for the most part do not recognize their imperialist history and believe that their country's foreign policy is dictated almost wholly by an altruism not shared by any other nation.

Vengeance

"And how many barrels of oil will thy vengeance fetch thee in Nantucket market, Captain Ahab?"
Herman Melville, *Moby Dick*, 1851

Vengeance is a moral value for those who follow three-thousand-year-old prescriptions such as "an eye for an eye and a tooth for a tooth." Vengeance is sometimes equated with justice. Families victimized by homicide or other horrible crimes are queried by the media and expected or prompted to call for the death of the crime's perpetrator. But before anyone exalts this value, look at the company it keeps. Vengeance is a regular habit of the Mafia and similar criminal organizations, of feuding villages in New Guinea or historical Borderer families such as the Hatfields and McCoys, and of modern street gangs. It inspires terrorist tactics. It motivates mass murderers who decide one day to right all the wrongs that have been done them by employers, family, and former or current girlfriends or wives. Vengeance is the only credible motivation behind capital punishment.

ri Lanka seems to be sliding into dictatorship because the majority Sinhalese—instead of trying to reconcile and include the minority Tamils who just lost a 26-year, brutal civil war— have voted for a corrupt and repressive leader who will keep sticking it to the Tamils.

With even less justification than direct vengeance, some individuals and groups visit on another party the same harms that have been visited on them. Call it "The Leaden Rule"—Do unto Others the Evil Done to Oneself by Somebody Else. Some commentators note that Israel puts the people of Gaza in a position resembling that of Jews under the Nazis (although not yet with extermination camps). The Borderers were subjected to massacres and exploitation through centuries in Britain, and then found themselves in a position to subject others to bad treatment: Irish Catholics in Ulster, Indians in America, and local populations in U.S. imperialist wars.

In the case of the Iraq War, many in the United States were predisposed to believe that Saddam Hussein was the perpetrator of 9/11 because they required vengeance and he was handy.

'Retaliation' is the word the U.S. media uses for the vengeful actions of more favored nations, such as Israel, in conflicts that go back and forth, as though the other side always starts it. Vengeance often demands not only an eye for an eye, but an arm and a leg as well. Vengeance is truly absurd when it takes the form of violence against personalized nation-states that contain millions of people, up to half of whom may be children. It then includes the meme of collective guilt—calling for collective punishment—and may further deteriorate into ethnic cleansing and genocide. These are barely 'ideas' at all but simply atavistic responses similar to those of lab rats when confronted with newcomers from a different colony. The reptilian brain seeks vengeance while a more highly developed human consciousness transcends this base impulse.

Political propaganda, popular entertainments that glorify revenge, enemy-making to justify conquest, and even some religious doctrines help perpetuate this meme as a valid response to crimes and conflicts. Vengeance is seldom mentioned in the New Testament as compared to the Old Testament, and Paul explicitly forbade human vengeance. Unfortunately, some prefer to follow those depictions of deities in certain traditions and holy books including the Old Testament who directed orgies of ethnic cleansing in the distant past. Here and now let us disavow all such beliefs and avoid such entertainments.

The Belief in Progress is an ideology that unthinkingly accepts new social rearrangements or new industrial technologies as a beneficial advance for the community or humanity as a whole.

But change alone does not necessarily benefit us and is therefore not necessarily 'progress.' In many cases advertising or spin creates the illusion of progress.

It would be better to require any innovation to meet certain tests, and only define it as 'progress' some years after its introduction, when there is an opportunity to view any unintended consequences.

Similarly, the word 'reform' used to mean a change for the better but now is appended to any law or policy that makes things different. The new plan may be a change for the worse, but it still keeps the old connotations of being an improvement.

Needing an Enemy: In order to be a warrior hero, one must have a monster to fight. Good must overcome evil. Wars are the ultimate in such either/or thinking. If the war is in fact fought over resources or land, the conflict is still framed in these ancient terms of one country good, another country bad. If one nation starts a war, the invaded or conquered nation automatically becomes the 'enemy.' We might ask, for instance, if the U.S. 'enemy' in Iraq was in fact simply an artifact of the U.S. invasion of Iraq.

It is long past time to get over this way of thinking. Our enemies today, the enemies of our species, are complex situations such as climate change and war itself. It would be pointless to frame our mission in terms of this ancient system of two adversaries.

Millenarianism is a recurring movement within religions that expects a great prophet or savior (Messiah) or the end of times, or both. The event will bring great hope or great destruction or some combination of these. Judaism, Christianity, and Islam have millenarianism or messianic tendencies. Depending on which poll you read, between 44 and 55% of Americans believe in the Rapture and 40% anticipate Armagaddeon. But millenarianism is not limited to the three monotheistic religions of the Near East. It is one of those ancient grooves of magical thinking to which humans are susceptible, as witness the Cargo Cults of Pacific Islanders or the Native American Ghost Dance movement.

Many apparently secular modern people put credence in end of times prophecies such as the Comet Kohoutek scare in 1973, or Mayan Prophecies which they understand too narrowly as judgments of doom. Millenarianism often ties into classic conspiracy theories.

Charismatic leaders usually initiate or maintain these millenarian beliefs, which seem to emerge during times of great social stress and change. People who have little control over their lives are often most susceptible. Cults such as the People's Temple (Jonestown) and extremist Christian fundamentalists such as Joel's Army are examples. So probably are violent Islamicist groups such as al-Qaeda. A blogger notes that one could see Nazi Germany as a millenarian movement, with Hitler as the Messiah.

Certainly our species faces a constellation of dire problems that we must deal with. By depending on the advent of a great leader to save us, or by giving into the despair of a fated devastation, we are not dealing with those problems.

National Spite Fences

When the wind changes direction, there are those who build walls and those who build windmills.

~Chinese proverb

The Great Wall of China (4,000 miles long), Hadrian's Wall which the ancient Romans built across the waist of Britain, and other walled cities of the past were built to defend against barbarian raids or foreign armies. The oldest still-existing control of either type is the Demilitarized Zone between South and North Korea. Another barrier called the Green Line seals Turkish northern Cyprus from Greek southern Cyprus. However, as the poet said, something there is that doesn't love a wall. Regarding the Berlin Wall that split apart a great city, President Ronald Reagan struck a universal chord in 1987 when he said, "Mr. Gorbachev, tear down this wall!" Although the Berlin Wall did fall in 1989, since then Israel and the United States have erected two more such infamous barriers.

Israel has actually constructed three barriers around Palestinian land: the Gaza Strip barrier; a 40-foot wall separating Gaza from Egypt; and most controversially, the West Bank barrier, to be 436 miles long. The West Bank barrier is of doubtful legality, since it is constructed on occupied land and in many cases enlarges Jewish settlements at the expense of Palestinian villages. The barrier also separates Palestinian enclaves from each other. Israel says the barrier is to protect Israel from Palestinian suicide bombers. Palestinians believe it is a land grab.

The U.S.-Mexico border fence was promoted as a security measure, to prevent illegal drug traffic, and to reduce illegal immigration. The wall is not continuous; barriers cover about a third of the border's length. Opponents say that the barriers are not effective for their purpose, cost far too much while enriching large contractors, and disturb animal habitat and migration patterns. The fence as planned divides tribal lands of three American Indian nations, the campus of the University of Texas at Brownsville, and three national wildlife refuges. As of June 2009, six months after the 670-mile-long barrier was supposed to be finished, the last 40 miles are meeting fierce opposition in southernmost Texas. The Laredo, Texas City Council unanimously voted against its implementation in their border city. A number of landowners are upset by possible loss of access to thousands of acres of their land stuck between the straight border fence and the curving Rio Grande. Several lawsuits are pending.

We will not develop species consciousness nor keep the peace by developing gated communities at the international level.

So, goodbye manicured lawns, white denatured foods, NATO, chosen people, vengeance, change that is automatically called progress, the need for enemies, millenarianism, and national spite fences.

Oh, did I forget the Drug War and the Space Wars? Add them to the bad meme trashcan.

Redefine Morality

Theologically speaking, the two parties have divided the Seven Deadly Sins as follows: Republicans oppose lust, sloth and envy; Democrats scorn gluttony, greed, wrath and pride. Little progress is reported.
> ~ Gene Lyons, "Hypocrisy All Around," *Arkansas Democrat Gazette*, July 2, 2009

U.S. media tend to define the concerns of 'morality' in the same way Evangelicals and more traditional Catholics do, as largely to do with reproductive issues, gender relations, and control of the human body: abortion, homosexuality, adultery, stem-cell research, recreational drugs, euthanasia. Meanwhile, prohibitions of drinking, smoking, card-playing, and dancing are less visible among Evangelicals than they were one or two generations ago. While there is no

denying the importance of reproductive and gender issues, we might also note that they are major topics in soap operas, tabloids, and everyday gossip. Sex sells.

Islamic and Christian fundamentalisms may greatly restrict women's sexual expression. Christian missionaries converting the natives to a new religion sometimes introduced 'the missionary position' as the only allowable way to have sexual intercourse. Some religions have interfered so much in people's sex lives and physical pleasures that adherents may end up obsessed with sexuality, confused, narrow-minded, hypocritical, or accepting of violence as a substitute for sex.

Sex scandals affecting public figures, especially politicians, often dominate the airwaves. These incidents are often notable because of hypocritical positions the offending politicians have taken in the past. But sometimes the scandal simply seems to be a more or less partisan way to bring down a successful politician. Meanwhile, financial scandal doesn't have the same intensity as sex does. During the same news cycle there was a Stanford charged with orchestrating a $7 billion Ponzi scheme and a Sanford who as state governor disappeared for a week to have an adulterous affair. Guess which one the press and the public were talking about?

Morality has more than this one dimension. A great divide exists between those who regard capital punishment, torture, and aggressive war as highly immoral, and those who do not see them as part of a system of morality, or who see them as morally justified by the Bible or the national religion of patriotism. The second group is approximately the same people who define morality as consisting largely of personal and reproductive issues, based on a limited number of rules. Beliefs in a punitive deity and general obedience to authority influence these views.

A small but suggestive Pew Research survey in 2009 showed that evangelical Protestants and those who attended church at least once a week were the most likely to say that using torture against suspected terrorists is "often" or "sometimes" justified. People unaffiliated with any religious organization were the least likely to accept torture. One might compare this to Stanley Milgram's famous experiments that tested whether subjects would give what they thought were electric shocks to others hidden behind a curtain, *if told to do so by an authority figure*.

Some of us are ready to replace the old taboos with a new and more conscious kind. Market research in the UK found that many supported the idea of 'eco-taboos' to back up environmentally beneficial actions. For instance, 58% believe that throwing things away instead of reusing or recycling them should become taboo. Similar taboos are already in operation, as for instance here in the United States where more and more people are catching the meme to bring their own reusable shopping bag to the grocery store. Most people want to do the right thing. But let us make sure the eco-taboos are well-thought out and taught consciously so they don't turn into "political correctness"—pointless formulas based on authority.

It is time to redefine morality in a larger way, more oriented towards species survival and planetary well-being. It's also important to make this distinction in media and public forums so that it is clear that there are two widespread views of morality, not just one. It is galling for those with a finely-tuned sense of ethics, who question every aspect of how they live, to be judged by others with a narrow, rule-based definition. Many already act according to this larger morality and since at least the 6th century BC some people and groups have done so.

Are Some Belief Systems Unsustainable?

A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.
~Aldo Leopold, *A Sand County Almanac*, 1949

Building on the above famous principle of ecological ethics by Aldo Leopold, one could look at various religious and ideological doctrines from the perspective of whether they tend to preserve the integrity, stability, and beauty of the human community along with the biological communities that sustain us. In other words, what if we weighed our most deeply held beliefs against either survivability or thrivability of all humanity?

Some might consider this an inappropriate exercise, because to them the particulars of their belief-system are of greater importance than even humanity's survival. Or by their actions they demonstrate such a belief. For the rest of us, though, human survival (which depends on planetary survival) is at the top of the list. We might well consider which human belief-systems seem to be 'life-enhancing' and which are not. Religious beliefs and ideologies that encourage humans to attain their highest ideals and to preserve the planet are likely to further peaceful human relationships, biotic communities, and social justice.

Yet contradictory systems of ethics are built into our faith traditions. Some theological doctrines aver that humans are wretched beings ("worms") who can't do anything right on their own, most of whom will not be saved during a final catastrophe. Some believe that history is made up of several distinct eras in which humans have invariably failed God's tests. Such beliefs do not inspire attempts to problem solve. One doctrine is that God chooses to save only certain people, regardless of their good works. This doctrine does not encourage good works.

Others believe that the present Earth with all its creatures is of no importance, or that most of humanity must die in a war of wars in order to fulfill God's plan. A poll conducted in 1999 by Princeton Survey Research Associates found that 40% of all U.S. adults (71% of Evangelicals) believe that the world will end in a battle at Armageddon. If one believes in the inevitability of a totally destructive war, one is not inspirered to work for peace. Barbara Rossing in *The Rapture Exposed* says that the basic Rapture belief is that the world cannot be saved, and personal salvation is all-important. Such pessimistic and self-centered beliefs are not likely to promote generativity apart from helping one's immediate family or the narrow aim of converting others to one's own beliefs. They also contain the grave danger of self-fulfilling prophecy.

The official Catholic position about population growth, shared by Protestant fundamentalists, is based on ideas that women's main role is reproduction and there should be few restrictions on childbearing. Obviously, following such doctrines will not help to bring human populations to a sustainable level. Problem areas exist in most religions and philosophical beliefs as interpreted by at least some followers, with some Islamic and Hindu sects hijacked by their most fanatic and nationalistic followers. In the United States we still see theological mistrust of science and of scientific evidence. This can be self-destructive to the race, especially when technology is adopted but not its scientific underpinning. To reject the scientific method and evidence-based reason now would be suicidal. Intellectually, we need to go forward, not backward.

However, rationalists can also get stuck. A friend who prides himself on his free-thinking states that the only truth he recognizes is supported by double-blind experiments. Aside from the fact that much of science is based on observation and measurement of unique/historical phenomena that cannot be directly subjected to experiments, this man has rejected more than he

realizes. His ideology doesn't fully take into account 20th century physics and newer sciences. He implies that individual human beings can learn nothing from their own experiences, and suggests that scientists are the sole authorities on all matters. He makes no distinctions between science, technology, and profit-making. He has bought into the colonialist idea that Western science is vastly superior to anything that indigenous peoples have developed over centuries of adaptation to their surroundings. In reaction to the simplistic religion of his childhood, he refuses to recognize the existence of many psychological and spiritual truths.

Jacob Bronowski, mathematician and expert in human biology once said: "There is no absolute knowledge. And those who claim it, whether they are scientists or dogmatists, open the door to tragedy. All information is imperfect. We have to treat it with humility."

It is evident that a number of widespread attitudes, beliefs and ideologies do not support the human species, the human spirit, or planetary health. Secular people whose only belief-system is egocentric consumerism will obviously not have much to contribute to the world unless one can reach their buried consciences. Social Darwinism—the creed of collective egotism—leads to injustice and conflict. Nationalism (patriotism) has led to countless wars and we are now at the point where the technology of war threatens the entire human race.

Political movements are often built on the psychological flaws of their leaders and thinkers, as well as on fictions with compelling narratives. Few of Ayn Rand's libertarian fans realize that the novelist and philosopher modeled several of her fictional heroes on a notorious serial murderer, of whom she said in admiration, "He has the true, innate psychology of a Superman." Andrew Lobaczewski describes how a small pathological minority sometimes takes control over a society and its government. Even a well-educated people such as those in 20th century Germany followed psychopathic leaders holding bizarre occult fantasies about Atlantis, a hollow earth, and an Aryan race.

Look at every belief that you hold dear. Consider all its implications and weigh it against human and planeatary survival. If you prefer your ideology to the species you belong to, at least acknowledge that fact.

Chapter 19
Hello, Future

As a species we humans have arrived at a defining moment. For the first time in our history, we have both the opportunity and the necessity to assume conscious collective responsibility for creating our future.
~David Korten, author and anti-corporate globalization leader, 1937-

Many people don't want to think about the future because they confuse looking ahead with worrying. But foresight and worry are quite different animals. Worry is based on fear and a perception of powerlessness. It is essentially uncreative. Foresight, on the other hand, looks ahead in order to prepare oneself for possible contingencies, and to find creative solutions for developing problems. It is based on feeling empowered, as individuals and groups.

Another kind of resistance to future-thinking may be based on interpretations of a well-known spiritual teaching that one should live in the present: "Be here now." I agree that it is wise to live fully in the moment, experiencing the world directly—and have promoted that idea as participating consciousness. However, this basic awareness does not automatically preclude knowledge of history, analysis of one's own culture, or reflection on how actions today might impinge on the future. If humanity's evolution depends on our own choices, we will have to look ahead, as well as behind, and sideways too. Particularly now that we have so many ways to kill off our own species, people need to be aware of the potential consequences of our actions on the global scale. A bumper sticker says: "A politician thinks of the next election. A leader thinks of the next generation." In this sense, we all need to become leaders.

The ability to foresee the likely consequence of one's action is a prerequisite for mature human beings. In *Teach Your Child How to Think*, Edward de Bono discusses the "perception tool" he calls "Consequence and Sequel," and suggests it might be the most important thinking tool in real life. C&S asks "Will it work out? What are the benefits? What are the problems and dangers (risks)? What are the costs?" Each situation has a specific C&S time-scale ranging from the immediate to the long-term, which might be a century or more.

However the world is not a static place where similar actions always produce the same result. In order to adapt to changing circumstances, we need a complex kind of foresight, with branching contingencies. Heroes in action movies and novels not only think fast, they are ready for whatever happens. They acquire the habit of thinking, perhaps unconsciously: *If I were to do this, then one of these things is likely to happen.* In a more intellectual sphere, chess masters also think contingently or strategically. In fact, a person must be able to think several moves ahead in order to play most board games or card games with any success.

Another entertainment that helps develop the ability to think about contingencies or branching possibilities is the novel or drama with a strong plot element, such as mystery stories. One of my favorite forms of reading is alternate history, in which a change in the past—often quite small—leads to an entirely different present.

Contingency thinking is sometimes utilized in the form of scientific thought experiments. Instead of conducting a physical experiment in the lab—especially if you can't do that for some reason—you do it imaginatively. Jared Diamond notes the usefulness of thought experiments in "historical sciences" that deal with unique events such as volcanic eruptions or supernovas.

Probability is another helpful tool of thought, in contrast to the word 'proof' which many over-use as if they expected either a court case or a single scientific experiment to give absolute

certainty. One finds proofs in geometry or formal logic because they are self-contained systems. The rest of experience is not. In the real world, evidence must pile up before the jury decides the defendant is guilty 'beyond a reasonable doubt.' Nobody claims this verdict is an absolute truth, and justice sometimes miscarries. Repeated scientific experiments with similar results increase the *probability* that a certain hypothesis is true or false—scientists do not claim they have proved it for all time. Scientific prediction is in terms of probabilities based on current knowledge.

Dylan Evans adds the new term "risk intelligence" to describe the ability to estimate probabilities with some accuracy. He argues that "Our ability to cope with uncertainty is one of the most important requirements for success in llife, yet also one of the most neglectaed." Evans says many people are not very good at gauging the limits of their own knowledge and are often overconfident or sometimes underconfident about what they know. They think that either they know something with absolute certainty, know it isn't true with the same certainty, or don't know anything about it at all. It is possible to develop greater risk intelligence, and one of the first steps is to start thinking in terms of probabilities rather than either/or.

A great many predictions simply extrapolate present trends. However, without recognizing cycles of growth and decline, extrapolation can result in absurdities. For instance, the human infant doubles its birth-weight in its first five months. You could then say, '*If present trends continue,* this child will weigh 450 pounds at age three.'

Bad predictions are as common as daisies in June—the Web has several long lists. For instance, in early 1929 a Yale professor of economics announced that "Stocks have reached what looks like a permanently high plateau." Some of the most laughable predictions show a glaring lack of imagination about technological innovation. The chief engineer of the British Post Office said in 1876, "The Americans have need of the telephone, but we do not. We have plenty of messenger boys." Western Union also dismissed the invention. Similarly, the chairman of IBM said in 1943, "I think there is a world market for maybe five computers." Others showed perhaps too much imagination, such as the president of a vacuum cleaner company who in 1955 predicted that "Nuclear-powered vacuum cleaners will probably be a reality in 10 years."

Political predictions are often divorced from reality, as in then-U.S. Defense Secretary Donald Rumsfeld's claim in February 2003 that "The [Iraq] war could last six days, six weeks. I doubt six months." Around the same time U.S. Budget Director Mitch Daniels claimed that the war will be "an affordable endeavor [that] will not require sustained aid [and will cost] in the range of $50 billion to $60 billion." In fact the Iraq War lasted almost nine years and according to Joseph Stiglitz, Nobel laureate in economics, the war will cost $3 trillion, including debt service and care of veterans. This represents a 50- or 60-fold increase above predicted costs.

Of course the existence of bad predictions doesn't mean that we should avoid all attempts to imagine or plan for the future. Since time immemorial, humans have been deeply interested to know what is likely to happen to them personally or to the group as a whole.

Seven main ways that humans look toward the future start with *generativity* which we already discussed as being an attitude and behavior of concern for generations to come, whether the family, community, or planetary community. Generativity is ancient and shared by some other species. A second, ancient way to see into the future has been *prophecy*, a long-range prediction based on direct intuition or communication with the spirit world or deity.

A third way to discern the pattern of developing events is through *divination*—predicting the future through technical but nonscientific means including systems such as astrology, or consulting the *I Ching* or Tarot. Divination may be based on hermetic beliefs about vibration and the Law of Correspondences: "As above, so below"—which in modern scientific speculation

resembles the 'Holographic Universe.' (Note that astrology is not solely a predictive system but is used by many for character analysis. The I Ching also has dimensions beyond divination. Hermeticism is a spiritual philosophy and is not itself a system of divination.)

Since the 17th century, *western science* has become the dominant worldview and instrument of prediction, basing itself on material evidence and probabilities rather than absolutes. Within this scientific context are predictive modes five, six and seven: forms of prediction and decision-making that involve *games theory* and/or large groups using the Internet such as 'prediction markets;' future thinking (or *futuristics* or futurology); and *science fiction*.

Prophecy goes back farther than civilization to the shamans and medicine men of small tribes in the Neolithic or even earlier. A prophet has a visionary experience about what is to happen in the future. I personally believe some people do have the gift of seeing further ahead than most, but the field is full of charlatans and false prophets either self-deluded or deluding others. We should also mention the self-fulfilling prophecy 'which is increasingly likely to occur as people hear it, repeat it, and believe in it.

There is a basic ambiguity about prophecies, especially dire ones: are they meant to warn us or to scare us? One can see prophecies as extrapolations of what will happen if people continue on their present course, something like the parent's warning "If you don't stop eating all that Halloween candy, your teeth will rot out."

Or one can treat prophecy as a predetermined, immutable fate, and let it frighten one into a gibbering idiot. For instance, the uncannily accurate Mayan calendar continued centuries beyond the actual demise of the Mayan civilization but to some it seems to end abruptly at the winter solstice, 2012, with a Galactic alignment. If you put that into a millenarian frame it is "end of the world." In vain archeologists and anthropologists tell us that the Mayans never predicted a doomsday. It is we moderns who are caught up in the mythology of apocalypse.

Futurists

> *The future always comes too fast and in the wrong order.*
> ~Alvin and Heidi Toffler, futurists

Systematic forecasting of the future began in the 1940s, using interdisciplinary and systems thinking. It was of particular interest to business and government but later acquired a broader audience. Today the World Future Society has 25,000 members and subscribers to its magazine, the *Futurist*, in 80 nations. There is as yet no school of futurology and no license to hang on the wall certifying one as a futurologist. Educated guesses can be more or less educated and may include varying numbers of contingency branches, including 'Wild Cards' which are low probability, high impact events. Futurists worthy of the name don't deal in simple extrapolation but always keep in mind that unpredictable events can change everything.

In a recent *Futurist*, editor Edward Cornish, and writers John L. Petersen, Brian Pomeroy, and Steve Malerich mention wild card possibilities such as Zero Point Energy (ZPE) conversion, human cloning, political upheaval in China, a worldwide backlash against fundamentalist religions, disabling of the Internet, a dramatic political shift in the United States to left or right, artificial intelligence that displaces service workers—and these are just the ones that somebody has predicted *could* happen. Another article includes among "The Best Predictions of 2011":

By 2016 "Solar power will be cheaper than both fossil fuels and nuclear power."

In 2025, Brazil, China, India, Indonesia, South Korea, and Russia will produce more than half of global economic growth.

2035: "Synthetic biology—the creation of life from nonliving chemicals designed on a computer—could produce thousands of synthetic genomes and life-forms not yet imagined."

2040: "Automation and robots will take over one/third of service-sector jobs."

There is at least one database to help those interested in wild cards and weak signals (warnings about the future that are as yet unclear). Another tool for futurists is Delphi polling, in which several experts are polled anonymously in a series of rounds and given a summary of responses from each previous round. They work to narrow these down until the experts reach consensus. Or the whole process may be online and open to all interested parties.

Futurists who are actually employed as consultants usually work for business organizations. Consequently there has long been a bias in the *Futurist* magazine and most probably in the entire field toward emphasis on technological innovation. For instance, an article by Thomas Frey in the January/February 2012 issue is titled "Eight Grand Challenges for Human Advancement." These challenges from the DaVinci Institute are heavily weighted toward techno visions: viewing the past, sending a probe to the center of the earth, "Elemental Deconstruction or Dissassembling Matter" (prerequisite to teleportation), travel at the speed of light, and similar goals. Mesmerized by scientific mythology, some of these visionaries and entrepreneurs leapfrog the very real and urgent challenges of climate change, nuclear proliferation, Sixth Extinction, and billions of people in poverty. It is as though these are merely boring glitches that will surely get fixed in due course, while we envision the sexy technofuture.

Still, futurists generally are trying to get ahead of the inevitable changes, and their insights are important. Last year a conference in New Zealand considered strategies for getting from 2011 to 2058—forty four years into the future. My own small city has periodic gatherings of citizens to compare visions of what they want the city to become in 10 or 20 years.

Science Fiction: There's a big difference between 'Sci-Fi' movies about space warriors or bug-eyed monsters, on the one hand, and speculative fiction (s-f) by masters of the writing craft such as Robert A. Heinlein, Orson Scott Card, or Ursula Le Guin. Some s-f writers (Arthur C. Clarke) have been working scientists, and some (Isaac Asimov) have also published many books of factual science. Well-written s-f often explores how humans might adapt to technological changes and sheds light on current developments in our own culture. S-f is distinct from fantasy because of its concern with scientific knowledge and technological change, although some s-f stories are 'harder' or more tied to known science than others.

S-f writers don't aim to predict the future but to tell a tale. Concepts such as time travel, faster-than-light travel, travel through wormholes, or parallel worlds are quite remote scientific possibilities but they make good stories. (Such plot elements are known in the field as McGuffins.) However, while not setting out to predict, some writers have accurately depicted future technological developments; Jules Verne was especially prescient.

Science fiction can also become a self-fulfilling prophecy, especially hard science fiction and the subgenre of military science fiction. Unfortunately, some at the Pentagon may be taking s-f space wars too seriously. In fact, science fiction is becoming a new mythology for a culture that erroneously styles itself as totally rational and beyond mythologies. Philosopher Chris Ott

notes a blurring of the boundaries between theoretical physics and science fiction with ideas such as time as the fourth dimension (first popularized by H.G. Wells) or string theory.

The benefits of reading or watching quality science fiction are at least two. The first is to cultivate the habit of thinking flexibly—exercising the "What if?" muscle. The second benefit is to help us consider specifically what might happen or how humans might cope with changes brought about by new technologies or technological events such as cloning, genetic genome engineering, mining the asteroids, or future wars using robot soldiers and cyborgs.

Chapter 20
Is Green Religion on the Way?

The inherent rights of Mother Earth are inalienable in that they arise from the same source as existence.
~"Universal Declaration of the Rights of Mother Earth," Cochabama, Bolivia, 2010

The Golden Rule is our universal religion. Different versions of it appear in every world religion and ethical system. The Golden Rule is easily expanded from human society to our relationship with other life—we are interdependent in more ways than we realize.

In view of the serious environmental crises that we face, green religion might seem to be a very welcome development. However, there are several different versions of green religion. Misunderstandings and contradictions accompany some of them. Philosopher Chris Ott points out that spirituality by definition has to do with the *spirit.* Religions often find it necessary to transcend the human tendency to turn the spiritual into the material—for instance, by worshipping idols or becoming frozen in rituals that have lost meaning. Thus some fear that green religion would be more materialistic than spiritual—more about resources than realization.

A lot depends on one's definition of religion, a word that is exceptionally hard to define. One online dictionary offers "Belief in and worship of a superhuman controlling power, especially a personal God or gods." However, this definition does not fit Buddhism, Taoism, Sufism, Unitarianism, Jainism, Shinto, Confucianism, Wicca, and some other belief-systems commonly regarded as religions. Some of these do not worship deities and are more engaged with ethical systems than with metaphysics. An anthropological definition of religion would include such practices as vision quests, totemism, magic rituals, and shamanism.

Other more poetic definitions of religion:

This is my simple religion. There is no need for temples; no need for complicated philosophy. Our own brain, our own heart is our temple; the philosophy is kindness. ~Dalai Lama

Religion: A daughter of Hope and Fear, explaining to Ignorance the nature of the Unknowable. ~Ambrose Bierce

There is only one religion, though there are a hundred versions of it. ~George Bernard Shaw

T. Jeremy Gunn says in the *Harvard Human Rights Journal* that definitions of religion typically assume one of three approaches. First is religion's metaphysical or theological sense, then how it is psychologically experienced, and third, as a cultural or social force. Gunn summarizes these three approaches to religion as Belief, Identity, and a Way of Life. Others have described religions as having a mystical core with concentric circles of believers around them— the largest, outer circle composed of those with conventional ideas of the religion that may be far removed from original teachings.

Sometimes we say that others have made a religion of sports, patriotism, the pursuit of money, or a political ideology. This is actually pseudo-religion since it lacks not only deities but also metaphysics or a complete ethical system. A pseudo-religion may contain ethical elements such as sacrifice for the greater good or freeing oppressed people, but these are not thought

through. Who determines the greater good? What about people outside this one nation? What happens after oppressed people are freed? Pseudo-religions ignore many aspects of life and religious questions such as: Who or what made the world? Why are we here? A religion needs to deal with ultimate concerns, according to theologian Paul Tillich.

Should we include a *lack* of religion as a religion? World-wide, the third largest 'belief-system' after Christianity and Islam is comprised of those who are irreligious: secular, agnostic, or atheist. The question is relevant here because one branch of green religion is religious naturalism which does not concern itself with deities or the supernatural.

Roots of Green Religion

Come forth into the light of things, Let Nature be your teacher.
~William Wordsworth, English Romantic poet, 1770-1850

Bron Taylor of the University of Florida's Department of Religion lists three major developments in green religion. First, followers of several world religions are looking into their own religious traditions for ecological wisdom. The greening of Christianity, in particular, has influenced many denominations, including evangelicals.

Others prefer to listen to the wisdom of indigenous people who regard Earth as sacred. In this second development of green religion, those who would revitalize the old nature religions are attempting to go back to the roots of human spirituality. Another branch is a neo-pagan revival of the ancient Gaia mythology in which 'Mother Earth' is an actual goddess and sometimes the first in importance. (This should not be confused with the Gaia Hypothesis introduced by scientist James Lovelock, which simply proposes that all of Earth's organisms and their inorganic surroundings form a self-regulating complex system that maintains the conditions for life on our planet.) This Gaia religion does not seem to have very many adherents, being used more often as a metaphor, but it draws fire from some Christians who conflate it with the entire environmental movement and see in it an anti-religion conspiracy.

Related to this development of nature as sacred are animism, pantheism, Deep Ecology, Creation Spirituality, and a long tradition of nature mysticism, sometimes expressed as poetry.

Third, some scholars are trying to develop a new sort of rational religion or *religious naturalism* that reveres nature and the cosmos but adheres to scientific understandings rather than belief in supernatural beings. Some suggest that putting all these strands together moves us toward a worldwide green religion, a civic earth religion. Again, many Christians, political conservatives, and others perceive a threat in this vision. About half the world follows one of the three Abrahamic religions—Christianity, Islam, and Judaism—and many of these followers see monotheistic religions as the only model for religion.

Not surprisingly, there are rough patches in the development of green religion when some emphasize stewardship of God's creation, others see the Earth itself as a deity or mother, some are pantheists instead of theists, and still others would rather not refer to the supernatural at all. Some opposition is based on confusion of ideas—for instance, tying the animal rights movement to environmentalism, or conflating the more radical ideas such as Gaia worship with the entire movement toward greener religion. But to see the Earth as sacred (associated with the divine) is not the same as to worship it as a divinity in itself. To want to preserve unique species is not the same as valuing non-human life more than human life. Green has many hues and shades.

A thread of opposition to green religion manifests as conspiracy theory related to fear of the UN, and a plot in which "A global green Gaia-religion seeks to swallow up all the world's religions into a single, unified 'earth ethic' administered and enforced through global governance." This is pretty groundless exaggeration. The attempt to ridicule greens or to paint them all as pagans, Marxists and control freaks has an increasingly smaller audience. The roots of some of this opposition lie in the history of people whose ancestors were herders, frontiersmen, and strong individualists whose traditional beliefs did not value nature except for its practical uses. Other roots lie in propaganda and organizing efforts by mining, timbering, and fossil fuel industries that perceive green values as a threat to business.

Greening of World Religions

I'm what you might call a Buddhist Roman Catholic, and at mass I hear the priest now talking about the need to heal our relationship to the Earth.
~Michael Zimmerman, professor of philosophy, Tulane University

In the face of increasing ecological destruction, a number of scholars have searched the major religions for evidence of Earth wisdom. Two professors of Religious Studies, Mary Evelyn Tucker and John Grim, see the basis of our environmental crisis as defective religious perception: "We no longer know who we are as earthlings; we no longer see the earth as sacred." A new field called 'religion and ecology' emerged among academics in philosophy and religious studies a few decades ago. In the late 1990s, a series of conferences called "Religions of the World and Ecology" attempted to find the common ground among various religious cultures to support environmentally sustainable societies. Building on the conferences, Tucker and Grim edited a series of books with the same title. Ten volumes appeared between 1997 and 2004 concerning the green dimensions of Buddhism, Christianity, Confucianism, Taoism, Hinduism, Indigenous Traditions, Jainism, Judaism, Islam, and Shinto.

For instance, the unity of all life is a basic spiritual principle of many ancient and modern indigenous peoples; modern-day religions incorporate this ancient idea of interconnection. In Mahayana Buddhism, the Bodhisattva (person on the path of enlightenment) recognizes the interdependence of all beings and is committed to serving others. The bodhisattva vows to forego his own final liberation until all sentient beings are free from suffering.

Many Christians subscribe to *'The Noah Principle,'* based on the biblical story in which Noah is commissioned to save breeding pairs of all the animals, in order to survive the Flood. Rev. Wesley Granberg-Michaelson of the Reformed Church in America says "The central point in the story of Noah and the ark…is the covenant established by God with 'living things of every kind.' And God's covenant is established not just with people; it is a covenant with all creation." The Noah Principle can inspire active stewardship of the planet as part of God's plan, specifically to prevent extinctions of unique species.

World religions leaders express the growth of environmental ethos. For instance, the spiritual leader of the world's Orthodox Christians, Ecumenical Patriarch Bartholomew I, first proposed in 1995 that pollution and other attacks on the environment could be considered sins. It seemed a more radical view at the time than it does now. This 'green patriarch' has led several groups of religious leaders, scientists, and activists on journeys to examine the relationship of faith and ecology; in 2005 it was a week-long voyage on the Amazon. Patriarch Bartholomew hoped to draw attention of religious leaders to the Amazon's crisis.

The *National Catholic Reporter* describes the meeting between Pope Benedict XVI and Patriarch Bartholomew in 2006 as "an encounter between two outspoken environmentalists." Benedict has linked environmental problems with world poverty and war, speaking more frequently on "the defense of creation" in the last few years. Their Common Declaration in Istanbul included this statement:

In the face of the great threats to the natural environment, we want to express our concern at the negative consequences for humanity and for the whole of creation which can result from economic and technological progress that does not know its limits. As religious leaders, we consider it one of our duties to encourage and to support all efforts made to protect God's creation, and to bequeath to future generations a world in which they will be able to live.

Meanwhile, a Buddhist conference in China urged more emphasis on environmental protection, and Hindu scholars expressed their worry about the ecological effects of rapid modernization in India. In Iran, Grand Ayatollah Yusef Saanei said it was every Muslim's duty to protect the environment. Across the Muslim world, many *fatwas* or religious edicts reflect similar readings from the *Qur'an* that God entrusted humans with protecting the Earth.

While some green advocates may have stretched the point in order to find modern earth-keeping injunctions within existing religious traditions, less controversy has risen from this effort than from some other developments in green religion.

The Green Bible

I love to think of nature as an unlimited broadcasting station, through which God speaks to us every hour, if we will only tune in.
~George Washington Carver

In 2008 HarperOne published the "Green Bible" on recycled paper, using soy-based ink, and with over 1,000 passages about creation and the environment printed in green. Protestants including evangelicals have for several decades promoted the ideas of environmental stewardship and Creation Care. In the United States, a broad alliance of evangelicals made a statement in 2006—the Evangelical Climate Initiative—which declared that "human-induced climate change is real." But within the largest Protestant sect, the Southern Baptist Convention, a growing global awareness about the threatened environment led both to energetic activism and to opposition. In March 2008 nearly 50 Southern Baptist leaders issued a declaration urging Baptists to take immediate and effective action to prevent climate change. They stated:

We do not believe unanimity is necessary for prudent action. We can make wise decisions even in the absence of infallible evidence. Though the claims of science [about climate change] are neither infallible nor unanimous, they are substantial and cannot be dismissed on either scientific or theological grounds.

Although this statement was much stronger than previous statements by the SBC, the director of the Baptist Center for Ethics, Robert Parham, criticized it as still being too timid. Parham lamented that "Scientific consensus simply isn't enough to trigger responsible moral action for those who demand the absolute certainty of divine revelation." In contrast, prominent Baptists such as Richard Land and Albert Mohler, president of Southern Baptist Theological Seminary

(both of whom have radio programs) opposed this declaration. Land claimed that the Earth is getting cooler, not warmer, and that global warming research is "pseudo-science." He said, "When they asked Jesus what was most important, he said, 'Love your God, and love your neighbor as yourself.' He didn't say anything about creation." According to Mohler, Earth care is important but secondary to the purpose of converting sinners.

Nature-as-Sacred Religion

I was born a thousand years ago, born in the culture of bows and arrows…born in an age when people loved the things of nature and spoke to it as though it had a soul.
~Chief Dan George

A second understanding of green religion, according to Taylor, is a worldview that comes from indigenous religions, paganism, pantheist philosophies, New Age beliefs, or nature mysticism. Taylor says that many of these belief-systems identify with indigenous peoples:

Even if sometimes simplistic and romantic, western popular culture has increasingly responded with positive affirmations of the perceived "nature-as-sacred" spiritualities of indigenous peoples….Many New Age and New Religious Movements, environmentalism itself, and mainstream religions as well, have attempted to learn, borrow, appropriate, or steal (depending on one's ethical evaluation of such phenomena or the specific example of it at hand) from indigenous religion.

Taylor notes that the Disney movie "Pocahontas" celebrated the nature spirituality of Native Americans. Disney World's Animal Kingdom in Florida replays the story with its theme of harmony among all creatures, asking audiences, "Will you be a protector of the forest?" Children are, of course, most open to this environmental kinship ethic, as they still live in participating consciousness and tend to identify and empathize with (other) animals. More recently, the film "Avatar" became a tremendous box-office success with its message of protecting Nature and indigenous peoples against the joined power of corporations and military. However the message of peaceful coexistence is somewhat undermined by the film's video-game violence.

Beyond such popular cinematic representations for western audiences are millions of participants in actual indigenous religions, as well as many westerners with more deeply understood spiritual beliefs based on nature.

Animism, New Age and Pantheism

The woods were formerly temples of the deities, and even now simple country folk dedicate a tall tree to a God with the ritual of olden times.
~Pliny, Roman naturalist and philosopher, 23-79 A.D.

Animism is not a religion but a belief that non-human entities are spiritual beings—that there is no separation between the spiritual and physical worlds. Souls or spirits may exist in animals, plants, rocks, mountains, rivers, clouds, and thunderstorms. Young children are natural animists until society teaches them otherwise, and so are members of most hunter-gatherer societies. According to a British evolutionary psychiatrist, Bruce G. Charlton:

Animism is not a religious or philosophical doctrine, neither is it an 'error' made by people too young or too primitive to know better - animism is nothing less than the fundamental mode by which human consciousness regards the world. Consciousness just is animistic. And this perspective is a consequence of human evolutionary history.

Animism is part of most indigenous religions and also of more elaborate religions such as Shinto and some Hindu sects. Adherents of animistic religions comprise the fifth largest of world religious groups, perhaps as many as 700 million individuals. Graham Harvey, a UK religious scholar who has revived animism as a modern belief (neo-animism), defines it as "the attempt to live respectfully as members of the diverse community of living persons (only some of whom are human) which we call the world or cosmos."

Animism is not the same as Pantheism. While animists believe everything to be spiritual in nature, they may not view the spiritual nature of everything as being one unified concept—which pantheists do believe. Pantheism views the Universe (Nature) as identical with God (or divinity). Animists put more emphasis on each unique soul. In Pantheism, everything shares the same spiritual essence, rather than having distinct spirits and/or souls.

New Age is not a religion, either, but the New Age subculture is part of sacred Nature trends. This complex of assorted beliefs, officially born in the mid-1970s, brings together various spiritual and consciousness-raising movements in Western culture. It is an attempt to syncretize (reconcile and unite) differing religious beliefs, especially East and West. It is also a revival of 19th century occult traditions and theosophy. Ott sees its modern beginning in the Spiritualist religion that started in America in 1848. New Age is a pre-rational, mythic/magical movement (according to Ken Wilber). Most relevant for us here is the New Age belief that "everything is connected" that spreads ecological awareness.

Often criticized for the heterogeneous nature and number of their beliefs, with relatively shallow understanding of them all, New Agers are however an important segment of spiritual seekers. One study indicates New Agers represent about 20% of the U.S. population, and are consistently the third largest religious group. Some people follow specific New Age beliefs while self-identifying as Christians. According to Pew Research,, 24% of the public overall and 22% of Christians say they believe in reincarnation. Similarly, 25% of the public and 23% of Christians believe in astrology.

Some Christian leaders are deeply upset by this infusion of New Age ideas into Christian beliefs, made more likely because of the general public's confusion and lack of knowledge about their own professed Christian religion.

Pantheism, on the other hand, is much older than New Age and is often misunderstood. It is *not* the same as simple nature worship. The Stanford Encyclopedia of Philosophy says:

> Pantheism is a metaphysical and religious position. Broadly defined it is the view that "God is everything and everything is God … the world is either identical with God or in some way a self-expression of his nature." Similarly, it is the view that everything that exists constitutes a "unity" and this all-inclusive unity is in some sense divine….Even with these definitions there is dispute as to just how pantheism is to be understood and who is and is not a pantheist. Aside from Spinoza, other possible pantheists include some of the Presocratics, Plato, Lao Tzu, Plotinus, Schelling, Hegel, Bruno, Eriugena, and Tillich. Possible pantheists among literary figures include Emerson, Walt Whitman, D.H. Lawrence, and Robinson Jeffers.

However both New Age and pantheist ideas are very different from if not antithetical to several major world religions and especially competitive to conservative Christianity. There is a

long history under colonialism of conversion to Christianity of indigenous groups holding animistic beliefs. Many Christians might well regard these new developments as a step backward. In particular, there is a great deal of resistance to any idea that human beings are not totally superior to (other) animals.

But Christians differ in their beliefs. Reverend Joy Gonnerman says "The view that we are above (and not within) creation comes from a narrow, self-serving, and conservative reading of Scripture."

Nature Mysticism

I, the fiery life of divine essence, am aflame beyond the beauty of the meadows, I gleam in the waters, and I burn in the sun, moon, and stars…. I awaken everything to life."
~Hildegard of Bingen, Christian mystic, 1098-1179

Another expression of 'Nature-as-sacred' is the long tradition of nature mysticism. Nicholas Gier (Dept. of Philosophy, University of Idaho) says that it is the most widespread form of mystical experience. The oceanic feeling of oneness-with-all-that-is has appeared in many cultures and spiritual traditions, as far back as the ancient Upanishads of India and early Taoism in China. This is part of the experiences of countless individuals such as gardeners, walkers, sea-watchers, star-gazers, and explorers of wilderness. Gier counts both Daoism [Taoism] and Zen Buddhism as nature mysticism, noting that Zen Buddhist techniques "jolt us out of [our] banal perceptions so that we come to see mountains, streams, and valleys for the very first time."

The literary tradition of nature mysticism includes poets—Thomas Traherne, Walt Whitman, haiku masters—and nature writers such as Joseph Wood Krutch, Loren Eiseley, Rachel Carson, and Annie Dillard.

Nature mysticism should not be confused with the aesthetic enjoyment of a beautiful landscape. Gier says that mysticism in general is much misunderstood and should not be used to describe the mysterious, the beautiful, the metaphysical, the occult, or the visionary. It is, rather, direct experience of the divine.

Mysticism is even harder to define than religion, since one of its characteristics is 'ineffability' or indescribability. The Oxford English Dictionary defines 'mystical' as "spiritual union with God [or with an impersonal, ultimate reality] transcending human comprehension." There are two major sorts of mysticism, sometimes called extrovertive (based on heightened sense perceptions) and introvertive (resulting from disengagement with sense experience). Nature mysticism is of the extrovertive type.

Ott sees a wide difference between nature mysticism and the introvertive mystical traditions of the four avataric religions: Hinduism, Zoroastrianism, Christianity, and Islam. The object of these traditions is union with undifferentiated reality. The four avataric religions are today practiced by about two-thirds of the human race, although only a small minority seeks out mystical experiences. These mystical traditions are focused on God-realization, Ott says, and not on the material world of Nature. However, that is the crux of the matter, since nature mystics do believe they find spirit in Nature and do not perceive it as entirely material.

Creation Spirituality

God writes the gospel not in the Bible alone, but on trees and flowers and clouds and stars.
~Attributed to Martin Luther, 1483-1546

The late Thomas Berry was a Catholic priest of the Passionist order, as well as cultural historian and pioneering ecotheologian. Fr. Berry said that humans have misunderstood their mission as that of domesticating and controlling nature, seeing wildness as destructive rather than the creative force it is and "the most profound mystery." The wild is creative and expanding, while discipline or form is the containing force. These two forces, like the yin and yang of Taoism, are part of a constantly changing pattern, not oppositional dualisms.

In Berry's creation spirituality, matter and spirit are two aspects of the same thing. "The earth is a communion of subjects, not a collection of objects." Berry speaks about a loss [of participating consciousness?] that has led to human estrangement from nature and from each other: "We are talking only to ourselves. We are not talking to the rivers, we are not listening to the wind and stars. We have broken the great conversation. By breaking that conversation we have shattered the universe. All the disasters that are happening now are a consequence of that spiritual 'autism'."

Deep Ecology is an ecological philosophy and doesn't describe itself as religion or spirituality. However, it has many resemblances to Pantheism, while others claim it for scientific religion. Don Johnstone of the Institute for Deep Ecology (UK) says the central idea of Deep Ecology is that we are part of the Earth and not separate from it. This corresponds to indigenous wisdom, as in the statement attributed to Chief Seattle in 1854 "We are part of the earth and it is part of us." Johnstone says two 20th century concepts or paradigms contributed to Deep Ecology: systems theory and the Gaia Hypothesis [as distinct from Gaia religion].

Religious Naturalism

A religion old or new, that stressed the magnificence of the universe as revealed by modern science, might be able to draw forth reserves of reverence and awe hardly tapped by the conventional faiths. Sooner or later, such a faith will emerge.
~ Carl Sagan, *Pale Blue Dot* (1994)

Philosophical/theological problems are evident in the third developing "green religion," an attempt to synthesize religious aspirations with scientific knowledge. Religious Naturalism is a 'Big Tent' religion which contains both "God-people" and "non-God" people who find the scientific method to result in the most reliable understanding of Nature.

While modern science is new, naturalistic religion has several forerunners. For instance, Buddhism encourages the investigation of Nature and according to Tenzin Gyatso, the 14th Dalai Lama, the Buddhist tradition has a "suspicion of absolutes" and relies on causality and empiricism. As far back as the 6th century BC, Siddhartha Gautama (Buddha) taught skepticism and reliance on reason in words that predate modern science by two millennia:

Do not believe in anything simply because you have heard it. Do not believe in anything simply because it is spoken and rumored by many. Do not believe in anything simply because it is found written in your religious books. Do not believe in anything merely on the authority of your teachers and elders. Do not believe in traditions because they have been handed down for many generations. But after observation and analysis, when you find that anything agrees with reason and is conducive to the good and benefit of one and all, then accept it and live up to it.

There have long been two pathways to God, says physicist Chet Raymo, a well-known writer on science and nature. The most populous path was for those who prefer to believe in miracles

and a personal deity, but the second pathway looks to the creation as the primary revelation. Raymo says this path was followed by "the great spiritual pilgrims," mystics and poets, and by early (6th century) Irish Christians such as St. Columbanus, who said "Those who wish to know God must first review the natural world." The brilliant medieval scientist Ibn al-Haytham (Alhazen) who developed the scientific method in the 11th century was a devout Muslim who believed his many scientific discoveries (optics, analytical geometry) were based on his faith. However, Raymo leaves out a third path, that of introvertive mysticism as practiced by mystics in the Sufi, Vedanta, and Christian traditions.

A basic tenet of the Baha'i Faith is the harmony of religion and science. Baha'i scripture states that true religion and true science cannot be in conflict. The founder's son said that religion without science is superstition, while science without religion is materialism.

Mid-20th century, a visionary French Jesuit priest and paleontologist—Pierre Teilhard de Chardin—spent most of his life trying to integrate religious faith with natural science and especially with evolution. Teilhard suggested that the Earth was an entity which in its evolutionary unfolding was growing a new organ of consciousness analogous to the cerebral cortex in humans. He called this planetary thinking network the Noosphere. (Several decades later biologist James Lovelock introduced the Gaia hypothesis that views the Earth as a single organism.) Teilhard saw humanity and the Spirit of the Earth moving toward a convergence of systems and consciousness he called the Omega point: "Science, philosophy and religion are bound to converge as they draw nearer to the whole." He thought this convergence would bring greater unity and peace. Teilhard was controversial and his works were censured by the Church.

An important part of this new tapestry of scientific religion was woven by 1920s quantum theorists such as Erwin Schrodinger, Werner Heisenberg, and Wolfgang Pauli, as well as the astrophysicist Sir Arthur Eddington, all of them deeply interested in the philosophical and metaphysical implications of their scientific work, quantum mechanics in particular. Eddington argued for a philosophical harmony between scientific investigation and religious mysticism, saying: "Not only is the universe stranger than we imagine, it is stranger than we can imagine."

Physicists such as David Bohm continued to explore metaphysical questions about quantum theory and its relationship to consciousness and to spiritual teachings. The trend of "Quantum Mysticism" began in the 1970s with publication of *The Tao of Physics* by Fritjof Capra, a physicist who found many parallels between quantum physics and Eastern teachings. Several popular books by non-scientists followed, leading some to dismiss these ideas as 'New Age.'

Chris Ott finds "a fundamental difference between spirituality and the new science which makes a merger of the two not just unlikely, but actually impossible." He says they are going in opposite directions: the scientist, headed outward into the phenomenal world, creates ever greater speculative complexity and is in fact reaching the limits of the materialist approach. Meanwhile the spiritual mystic looks inward to find the source of illusory appearances. Ott says that people often become "lost in the analogy" used by scientists because of a similarity with spiritual language. These misleading metaphors may have the ring of mysticism, but not its character.

Nicholas Gier agrees that modern physics is not mystical, and in one sense is the opposite of mysticism, because it has divided up reality into hundreds of subatomic particles. He says "What we have is a radical pluralism not an absolute monism." Gier notes resemblances of modern physics to the Asian philosophies of Buddhism and neo-Confucianism, but not to the mystical traditions of Vedanta or Sufism.

At the forefront of a new movement that attempts to integrate science and spirituality, Brian Swimme is a mathematical cosmologist at the California Institute of Integral Studies. Swimme

finds the Universe an unfolding revelation and says "I do think absolutely that there will be a flourishing of religions, not a withering away. And they will flourish to the degree that they will move into the context of planet and universe." Thomas Berry and Swime collaborated on a book, *The Universe Story* (Harper, 1992) and a film, "The Awakening Universe."

The Rev. Michael Dowd, ordained as a Pentecostal minister, found the Universe Story told by Berry and Swimme to be a compelling one. From 2002-2009 he traveled with his wife Connie Barlow, a noted science writer, as an 'evolutionary evangelist,' speaking before hundreds of religious and secular groups. Dowd spoke of evolution as a "new revelation." In 2007 he published *Thank God for Evolution: How the Marriage of Science and Religion Will Transform Your Life.* Dowd said he wrote the book "to help religious believers from different traditions move toward an evidential worldview without having to abandon their tradition to do so."

Other important figures in the development of religious naturalism are biologist Ursula Goodenough (*Sacred Depths of Nature*), philosopher-theologian Jerome A. Stone (*Religious Naturalism Today*), and philosophy professor Loyal Rue, author of *Religion Is Not about God* and *Everybody's Story*. Together they describe a post-supernatural connection with nature based on evolutionary insights, an intended marriage of science and religion.

There is also some blending of scientific outlook with "nature as sacred" religions. An organization called the World Pantheist Movement claims to shelter a diversity of spiritual orientations such as scientific pantheism [only one form of pantheism], religious humanism, religious naturalism, deep ecology, and nature-worship. The group states that they also find common ground with philosophical Taoism, Gaian religion, Western forms of Buddhism, those individuals in Unitarian Universalism who do not believe in supernatural beings, and "those forms of Wicca and paganism that see magic and the gods as symbols rather than realities." In Ott's view, most of these are not actually "spiritual orientations" because they do not recognize divinity or any spirit beyond the material world.

A Green Earth Religion or a Green Earth Ethic: The greening of organized religions and the revitalization of "nature as sacred" religions are joined by a third attempt to blend religion and science, all in the service of preserving the planet. Putting all three developments together, Taylor sees evidence of a potential civic earth religion**,** in which scientists, political figures, religious scholars, and many other people around the world "despite diverse and sometimes mutually exclusive religious worldviews and national interests, nevertheless express religious fidelity to the biosphere."

In this vision, the green earth religion does not replace other religions or religious worldviews but complements them. However, since the concept of an earth religion threatens the faith of many Christians and others, it might be better to think of it as an e*arth ethic* rather than a religion. Also, the less 'official' it is, the better. States and bureaucrats have never been the best guides to spiritual life.

Despite philosophical conflicts and differences, we need to let a Green Earth Ethic develop in its own ways. It is sorely needed.

Chapter 21
Paradigms Old and Newer

listen: there's a hell of
a good universe next door; let's go
~e. e. cummings, "pity this busy monster, manunkind"

A perennial survey asks the American public if their country and its government are "on the right track." We might also ask this question about our species. In the past, many creatures evolved in ways that ultimately did not adapt them for changing conditions. It is for this reason that 99+% of species we find in the fossil record are now extinct. As humans are increasingly in charge of our own evolution, we may well have made a bad choice or two. It is quite possible that human civilization has developed in ways that are not healthy for the species, or that human institutions have overwhelmed us. We are now sufficiently self-conscious to know what we are doing, and to change it if necessary.

So, *is* the species (or civilization) on the right track?

Some believe that the human race, or a large portion of it, took a wrong turn in the road some time ago—decades, centuries or even millennia back. Our biggest mistake may have been a huge growth in numbers over the last century. Or the major problem might be with industrial capitalism or with industrialism itself. Looking farther back, it may be that the human animal is better adapted to life in tribes than in nation-states. Some say that dependence on agriculture that began 10,000 years ago may have been a wrong move. But it is certainly too late to step back from agriculture and into the old hunting and gathering mode—there are too many of us now and we know too much. However, it is not too late to put society together in a different way.

Paradigms in need of change cluster around the 17th and 18th century birth of capitalism, nationalism, modern science-and-technology, corporations, and materialist philosophy. Thomas Berry locates the moment that industrial society achieved dominance over the natural world as the 1880's, and says that since then there have been few limitations on the exploitation and destruction. Coincidentally or not, that was also the decade that corporate personhood was born. The last 30 years of neoliberal doctrine and globalization have greatly increased the rate of ecological decline. Notions about democracy also need a good bit of tweaking before we lose this important piece of social evolution.

It is evident that the human species needs to transform ourselves, and in a hurry, too, if we want to keep from going extinct because of our bad choices. It is time to truly become *Homo sapiens sapiens*—the wisest primate yet…the spiritual species.

So how do we pull ourselves up by our own bootstraps, how get from here to there?

Survival/thrival mode involves practical and technological changes. Some ideas proposed in this book may seem too novel, yet it is important to have them out there in the field of consideration. Those who want to be more revolutionary, to go at a faster pace will have to wait until enough of us catch up to form a critical mass. Newer paradigms with potential to replace those now three or four centuries old include sustainability, bioregionalism, Permaculture, cooperatives, radical transparency, nonviolence, decentralization, ecological economics, indigenous knowledge, appropriate technology, green religion, LETS/Time Banks and local currencies, nonviolence, and the Precautionary Principle. (This is not a complete list.)

Never underestimate the power of ideas. Sometimes a single word becomes a frame that changes our whole direction.

Not only do our basic ideas need upgrades, but so do our patterns of thinking, with most of us still hindered and delayed to some degree by hard-wired tendencies and ancient mental habits. We are unduly fond of ideologies that seem to wrap everything up so neatly that one doesn't have to think anymore. Thinking, after all, is work—in the physics sense of using ergs. Yet many people actually enjoy doing it just as many enjoy sports and exercise. We've got to add to the sum total of thinking going on, making it easy and accessible and even enjoyable. This is prerequisite to any paradigm change.

We need to fall out of love with technology. We need more primary experiences, in nature, and trust in our own perceptions. We need a movie called "Honey, I Shrank the Corporations." We need to get extremely serious about nuclear disarmament, and we need to stop undermining the UN and fund it properly for its humanitarian and peacekeeping work.

Above all, we need to cultivate loving-kindness. There is no wisdom without it. Joseph Goldstein suggests four insights in times of distress—and surely the world is in a time of distress right now. The first is to try to see every situation within a larger context. As an example he says that the Dalai Lama often speaks of how one's enemy teaches one to have patience. Second, one must see that our enemies (or difficult people in our life) are human beings like ourselves. Third, we must let go of pride and self-importance. Fourth, hatred never ends because of hatred—it ceases only in response to love.

Humans have always managed to find a few silver linings, to stop and smell the roses. After all, we've survived a species bottleneck, the Black Death, genocides, wars, famines, and natural disasters, not to mention the hugely destructive 20th century. Yet we still have a sense of humor and a shining thread of optimism. Along with ecological sustainability we might aspire to psychological sustainability. Let us celebrate every advance we make in achieving sustainability, in making peace, in overcoming old hatreds. Let us see ourselves as powerful, wise, and noble creatures, and let that be a self-fulfilling prophecy.

"We have it in our power to begin the world over again."
~Thomas Paine, American revolutionary

NOTES AND SOURCES

(Notes and *also see* are in bold type)

Introduction
U.S. brokenness**:** David DeGraw, "15 Signs American Society Is Coming Apart at the Seams,"
www.alternet.org/module/printversion/144109
See James Hoggan with Richard Littlemore, *Climate Cover-Up: The Crusade to Deny Global Warming*, Greystone Books, 2009
API members include BHP Billiton, BP, Chevron, Conoco, Exxon, General Electric, Halliburton, and Shell.
Pew survey: Dina Cappiello, AP, Oct. 23, 2009
Other vital resources: For instance, rare-earth metals such as cerium, lanthanum, samarium, neodymium, thulium, and lutetium are used in many high-tech and military applications including oil refining, missile-guidance systems, hybrid cars, wind turbines, and compact fluorescent light-bulbs. While not terribly rare, they must be found in dense concentrations in order to mine them profitably. The world's largest, currently almost sole source of rare-earth metals is a mine in China, according to Martin Zimmerman, *Los Angeles Times*, October 18, 2009

Chapter 1: Open the Window
Hazel Henderson, "Education for the Third Millennium: Looking Back from 2050," April 2002,
www.newhorizons.org/future/hendersonh.htm
Adbusters, http://en.wikipedia.org/w/index.php?title=Adbusters&printable=yes
Dual-flush converter, www.eartheasy.com
Jennifer Quinn, "Protestors around Europe warm up for Copenhagen," AP, December 6, 2009
Estimates of the 2003 peace protests are from six to 30 million people.
Climate actions: www.350.org
"2010 Imperative Global Emergency Teach-in," http://architecture2030.org/action/2010_imperative_global_emergency_teach_in
"Teach-in," http://en.wikipedia.org/wiki/Teach-in
"How to start a teach-in," http://occupycolleges.org/2012/02/19/how-to-start-a-teach-in/
"Occupy LA Teach-in and More," http://www.laprogressive.com/occupy-la-teach-in/
Mark Hertsgaard, "Emissions Impossible," *Mother Jones*, May/June 2012

Chapter 2: Some Basic Guidelines
PBB disclosure: *Audubon*, July 1977
Environment News Service, "Goldman Prize Names World's Most Amazing Grassroots Environmental Leaders," April 22, 2009,
www.alternet.org/module/printversion/137805
Bill Moyers, *Welcome to Doomsday*, New York Review of Books, 2006
Eric Berne, *Games People Play*, Ballantine rev. ed. 1992
One must have a sense of proportion even about a sense of proportion, as Douglas Adams suggests in *The Restaurant at the End of the Universe* (1980) in which a device known as the Total Perspective Vortex allows viewers to see the whole infinity of creation and their relationship to it in one instant—which destroys their brain. "If life is going to exist in a Universe of this size, then the one thing it cannot afford to have is a sense of proportion."
Wendy McElroy, *The Reasonable Woman*, Prometheus Books, 1998
Robert Mackey, "Ireland Outlaws Blasphemy," *New York Times*, July 24, 2009,
http://thelede.blogs.nytimes.com/2009/07/24/ireland-outlaws-blasphemy/?pagemode=print
"How to Fight Addiction," *Parade*, Nov. 22, 2009
Afghanistan Pomegranates: Heidi Vogt, AP, Nov. 21, 2008
Wingspread Statement: www.gdrc.org/u-gov/precaution-3.html
Lloyd letter: *Futurist*, March/April 2009
Thomas J. Sugrue, "Hearts and Minds," *The Nation*, May 12, 2008
Joseph Goldstein, "Triumph of the Heart," *Tricycle* magazine, Spring 2008
"Home" directed by Yann Arthus-Bertrand, is a beautiful film showing the planet Earth as an interconnected whole,
www.youtube.com/watch?v=jqxENMKaeCU

Chapter 3: A Collective Mind Is a Terrible Thing to Waste
Gary Small, M.D. and Gigi Vorgan, *iBrain: Surviving the Technological Alteration of the Modern Mind*, Collins Living, 2008
Thinking is work: "Science Times," *Arkansas Democrat Gazette*, October 20, 2008
Daniel Pink, *A Whole New Mind*, Riverhead, 2005
Charles Harper Webb, "Funktionslust," [poem] *Virginia Quarterly Review*, Summer 1999,
www.vqronline.org/articles/1999/summer/webb-funktionslust/
Kathleen S. Gorman, "The Relationship between Undernutrition and Behavioral Development in Children," *Journal of Nutrition,*
1995

"Neurobehavioral effects of long-term exposure to pesticides: results from the 4-year follow-up of the PHYTONER Study," *Occupational and Environmental Medicine*, doi:10.1136/oem.2009.047811, http://oem.bmj.com/content/early/2010/10/18/oem.2009.047811.abstract

John Duffus and Howard Worth, "Common Types of Chemical That Cause Health Risks," http://old.iupac.org/publications/cd/essential_toxicology/IUPACTOX7.pdf

Mt. Sinai study: *Environmental Health Perspectives*, May 2005 (Lester R. Brown, *Plan B 2.0*)

"Pollution affecting brains and balls," *Ecologist*, March 2009

Daniel Goleman, *Ecological Intelligence: How Knowing the Hidden Impacts of What We Buy Can Change Everything*, Broadway Books, 2009

Didi Tang, "Facatory plan sets off melee in China," AP, Oct. 28, 2012

Elizabeth Grossman, "From the Fields to Inner City, Pesticides Affect Children's IQ," http://e360.yale.edu/feature/from_the_fields_to_inner_city_pesticides_affect_childrens_iq/2404/

Robin Arnette, "High Pesticide Exposure Associated with Cognitive Decline," November 2011, http://www.niehs.nih.gov/news/newsletter/2011/november/science-pesticide/index.cfm

"Eight Possible Side Effects of Pesticides," http://www.nursingdegree.net/blog/926/8-possible-side-effects-of-pesticides/

Sandra Steingraber, "The Falling Age of Puberty in U.S. Girls: What We Know, What We Need to Know," 2007; Erin Barnes, "Before They're Ready," *E Magazine*, March/April 2008

Evelyn Pringle, "US Kids Represent Psychiatric Drug Goldmine," Dec. 12, 2009, www.truthout.org/1213091?print see Robert Whitaker, *Mad in America*, Perseus, 2001

www.PsychRights.org

Rob Stein, "Scientist Finding out What Losing Sleep Does to a Body," Oct. 9, 2005, www.washingtonpost.com/wp-dyn/content/article/2005/10/08/AR2005100801405 ...

Shari Roan, "Cheating Sleep Can Prove Costly," *Los Angeles Times*, April 22, 2008

Fred Hutchinson Cancer Research Center, "Light at night and working the graveyard shift linked to increased risk of breast cancer," Oct. 16, 2001, www.fhcrc.org/about/ne/news/2001/10/16/graveyard_cancer.html?&&printfriendly Evelyn Pringle, "US Kids Represent Psychiatric Drug Goldmine," Dec. 12, 2009, www.truthout.org/1213091?print see Robert Whitaker, *Mad in America*, Perseus, 2001

 www.PsychRights.org

Youths 17-24: Greg Keller, AP, Dec. 9, 2009 also Christian Davenport and Emma Brown, *Washington Post*, Nov. 8, 2009

 Occupational Health and Safety, "Americans Not So Sleep Deprived, Says University of Maryland," March 13, 2008, http://webuse.umd.edu

Roger R. Rosa and Michael J. Colligan, "Plain Language about Shiftwork," U.S. Dept. of Health and Human Services, July, 1997

Dr. William Dement, "Sleepless at Stanford," September 1997, www.stanford.edu/~dement/sleepless.html

Nikhil Swaminathan, "Psychiatric Disorders from No Sleep?" *Scientific American*, Jan. 2008

Theresa Brennan, *Globalization and Its Terrors*, Routledge, 2003

Temma Ehrenfeld, "Five Reasons Your Office Is Bad for You," Dec. 14, 2007, www.newsweek.com/id/77991/output/print

WHO studies noise: George Monbiot, "Bring on the Recession," Nov. 1, 2007, www.alternet.org/module/printversion/66629

Magda Havas and David Stetzer, "Dirty Electricity and Electrical Hypersensitivity, Five Case Studies," Environmental and Resource Studies, Trent University, Peterborough, ON, World Health Organization Workshop on Electrical Hypersensitivity, Oct. 25-6, 2004, Prague, Czech Republic, www.stetzerelectric.com/filters/research/; www.electricalpollution.com/documents/Havas&Stetzer_WHO.pdf

www.dirtyelectricity.org

Frank Forencich, "Peripheral Vision Statement," see "Use It or Lose It," *Sports Vision Magazine*, Vol. 1, #1, 2007

Depression: *Adbusters*, Jan/Feb 2005

Christopher Null, "Spam Level 'Declines'…to 97% of all email," http://tech.yahoo.com/blogs/null/137384

Tess Rheinhardt, *Adbusters*, Jan/Feb 2005

Juliet Schor, *Born to Buy: The Commercialized Child and the New Consumer Culture*, Scribner, 2004

My website/blog is www.thinkingtowardsurvival.com

Vohs: *Ecologist*, June, 2008

Stanford multi-tasker study: Randolph E. Schmid, AP, Aug. 24, 2009

Chapter 4: Creative Thinking

Joseph A. Tainter, "Complexity, Problem Solving, and Sustainable Societies, 1996, http://dieoff.org/page 134.htm

Joseph A. Tainter, *The Collapse of Complex Societies*, Cambridge University Press, 1988

Daniel H. Pink, *A Whole New Mind*, Riverhead Books, 2005

Lee Altenberg, "Beyond Capitalism: Leland Stanford's Forgotten Vision," *Sandstone and Tile*, Winter 1990, Stanford Historical Society, http://dynamics.org/~altenber/PAPERS/BCLSFV/

Charles W. Prather, PhD, "How Is Your Climate for Innovation?" www.thinking.net/Creativity/creativity.html

C. Eugene Walker, *Learn to Relax*, in McElroy, *The Reasonable Woman*

Dr. Amantha Imber, "How to warm up your creative-thinking brain, *Australian Anthill Magazine*, May 28, 2008, www.anthillonline.com/article_detail.php?id=661

The Artist's Magazine, July 2002

Forensic Science Technician, "100 Online Brainstorming Tools to Help You Think outside the Box," http://www.forensicsciencetechnician.org/100-online-brainstorming-tools-to-help-you-think-outside-the-box/
Linda Tischler, "Seven Secrets to Good Brainstorming," http://www.fastcompany.com/articles/2001/03/kelley.html?page=0%2C1
Linda Tischler, "Six Surefire Ways to Kill a Brainstorm," http://www.fastcompany.com/articles/2001/03/kelley2.html
"Wisdom of the Crowd," http://en.wikipedia.org/w/index.php?title=Wisdom_of_the_crowd
Institute for the Future: http://www.iftf.org/
Cliff Hughes, personal communication
Better wind tower design: Unknown, *E Magazine*, May/June 2005
"global:ideas:bank," www.globalideasbank.org/site/about/detail.php?articleId=25
idea-a-day.com
Jon Harvey, "Small & creative ideas with big results," http://smallcreativeideas.blogspot.com/
"Ideas bank," http://en.wikipedia.org/w/index.php?title=Ideas_bank&printable=yes; also WorthIdea, halfbakery, and ShouldExist
Erich Fromm, in David Loy, "Rethinking Karma," *Tricycle* magazine, Spring 2008

Chapter 5: We Need an Intellectual Infrastructure
80% news: Dave Gilson, "Black and White and Dead All Over," *Mother Jones*, July/August 2009
Dave Gilson, www.washingtonpost.com/wp-dyn/content/article/2009/11/17/AR2009111704198 ...
Cronkite: Anick Jesdanun, AP, Feb. 9, 2007
Newspapers listed as in deepest trouble are the San Francisco Chronicle, Philadelphia Daily News, Minneapolis Star Tribune, Miami Herald, Detroit News, Boston Globe, Chicago Sun Times, NY Daily News, Fort Worth Star Telegram, and Cleveland Plain Dealer, www.24/7WallStreet.com
Douglas Lee, "Will a plan for tax-exempt newspapers sink or swim?" *Northwest Arkansas Times*, April 14, 2009
Author unknown, "Time for the 'Newspaper Revitalization Act' Revitalization Act?" October 21, 2011, http://onnonprofits.wordpress.com/2011/10/21/time-for-the-newspaper-revitalization-act-revitalization-act/
 "Bad News for the News," *Arkansas Democrat Gazette*, April 16, 2009
45% H.S. grads: www.stateofthemedia.org/2009/narrative_newspapers_audience.php?media=4&cat=2#7edu
"World Internet population has doubled in the last five years," http://royal.pingdom.com/2012/04/19/world-internet-population-has-doubled-in-the-last-5-years/
Tana Ganeva, "FCC Chairman Proposes New Net Neutrality Rules," Sept. 21, 2009,
 www.alternet.org/module/printversion/142767/?type=blog
"Net Neutrality," www.pbs.org/moyers/moyersonamerica/print/netatrisk_neutrality_print.html
FCC, Dec. 23, 2010, http://transition.fcc.gov/Daily_Releases/Daily_Business/2010/db1223/FCC-10-201A1.pdf
Robert B. Reich, *Supercapitalism: The Transformation of Business, Democracy, and Everyday Life*, Knopf , 2007
"Annual Worldwide Press Freedom Index-2006," www.rsf.org/article.php3?id_article=19381
Adbusters has produced the "Adbusters Media Empowerment Kit" for use in schools, www.adbusters.org
"How to Detect Bias in News Media," January, 2004, www.fair.org/activism/detect.html
Sue Wilson, "Limbaugh's Lies Sabotage the Health Reform Debate," July 25, 2009, www.alternet.org/module/printversion/141547
According to Bill Moyers, *Welcome to Doomsday*, the United States has 1,600 Christian radio stations and 250 TV stations.
Fairness Doctrine: see Richard Penny of Finland presenting pros and cons for the International Debate Education Association (IDEA), "Summary: Should news broadcasters be required to be balanced and impartial in their reporting of events?" www.idebate.org/debatabase/topic_print.php?topicID=804
Frederick Pohl and C.M. Kornbluth, *The Space Merchants*, Ballantine Books, 1953
Andrew Vanacore, "As broadcasters slide, free TV wobbles," AP, Dec. 30, 2009
Collection of facts and assessments of the state of literacy in the U.S.," www.espindle.org/literacy_facts.html
National Center for Education Statistics, "State & County Estimates of Low Literacy," http://nces.ed.gov/NAAL/estimates/StateEstimates.aspx
"Literacy in the United States,"
 http://en.wikipedia.org/w/index.php?title=Literacy_in_the_United_States&printable=yes
Thomas G. Sticht, "How Many Low Literate Adults Are There in Canada, the United States, and United Kingdom? Should the IALS Estimates Be Revised?" March 5, 1999
Bob Cleckler, *Let's End Our Literacy Crisis*, American University & Colleges Press, 2005
Bob Cleckler: http://learntoreadnow.org/ , "A Brief Look at the Proposed System," www.literacy-research.com/Proposal.html, www.literacy-research.com/Chapter1.htm
"Free culture movement," http://en.wikipedia.org/w/index.php?title=Free_culture_movement
Free university courses: Don Tapscott, "Higher Education Is Stuck in the Middle Ages—Will Universities Adapt or Die Off in Our Digital World?" June 17, 2009, www.alternet.org/module/printversion/140703
http://education-portal.com/articles/Universities_with_the_Best_Free_Online_Courses.html
Teresa Moss, "Class Studies Hollywood History Myths," *Northwest Arkansas Times*, December 30, 2011

Model syllabus for critical film viewing: Steve Hicks, "Lesson Plan—1765 to the Declaration of Independence," www.learningtogive.org/lessons/unit166/lesson2.html; see also "History vs. Hollywood: The Patriot, Teacher's Guide" and "Hollywood and the American Revolution," www.digitalhistory.uh.edu/historyonline/amrevfilm.cfm

Outsourcing libraries: Julia Silverman, AP, October 5, 2007

"What is Free Software?" http://www.gnu.org/philosophy/free-sw.html

"MITOPENCOURSEWARE," http://ocw.mit.edu/index.htm

Open Source Initiative,

 Free Software Foundation,

Creative Commons,

Open Source Philosophy

Eco-Patent Commons: *E Magazine*, May/June 2012

http://www.wbcsd.org

http://www.greenxchange.cc

"Swede admits home-made atom experiment was 'crazy'," BBC News, August 4, 2011, http://www.bbc.co.uk/news/world-europe-14406766

"Deliberative Polling[R]: Toward a Better-Informed Democracy," http://cdd.stanford.edu/polls/docs/summary/ "Deliberative Polling," www.peopleandparticipation.net/display/Methods/Deliberative+Polling

James S. Fishkin, "Deliberative Polling as a Model for ICANN Membership," http://cyber.law.harvard.edu/rcs/fish.html

"ICANN," http://en.wikipedia.org/w/index.php?title=ICANN&printable=yes)

"Open Space Technology," www.peopleandparticipation.net/display/Methods/Open+Space; www.openspaceworld.org/news/join-us/

"About National Issues Forums (NIF)," www.nifi.org/about/index.aspx

Joshua Holland, "How Right-Wing Conspiracy Theories May Pose a Genuine Threat to Humanity," Dec. 25, 2011, http://www.alternet.org/story/153554/how_right_wing_conspiracy_theories_may_pose_a_genuine_threat_to_humanity

David Hackett Fischer, *Albion's Seed: Four British Folkways in America*, Oxford University, 1989

Steve Brawner, "Freedom of Speech, Not from Responsibility," *Northwest Arkansas Times*, May 27, 2012

George Monbiot, "This Is about Us," *Guardian*, Dec. 15, 2009

"Core Ideals of the Enlightenment," Northern Arizona University Political Science Department

Augustus B. Cochran III, *Democracy Heading South*, University Press of Kansas, 2001

Anatol Lieven, *America Right or Wrong: An Anatomy of American Nationalism,* Oxford University Press, 2004

Emilio Gentile: Bill Moyers, *Welcome to Doomsday*, New York Review of Books, 2006

Frontline, "Sick around the World," PBS, November 10, 2009 (rebroadcast)

Eric Lane, "America 101," *Democracy*, Fall 2008, in *Utne Reader*, Jan-Feb 2009

Temple Grandin and Catherine Johnson, *Animals Make Us Human*, Houghton Mifflin Harcourt, 2009

Eric Garland, "Demography," *Futurist*, Jan/Feb 2007

"Trade language," Wikipedia

 English spelling: www.espindle.org/literacy_facts.thml

Brett Bennett, "Library Provides Language Program," *Northwest Arkansas Times,* Jan. 11, 2010

Wendy McElroy, *The Reasonable Woman: A Guide to Intellectual Survival*, Prometheus Books, 1998

Foundation for Endangered Languages, "Bibliography," www.ogmios.org/bib.htm

Richard Hooker, "Native American Languages," Civilizations in America, Washington State University, 1996, updated June 6, 1999, www.wsu.edu/~dee/CIVAMRCA/LANGUAGE.htm

Papua: *Alternative Press Review*, Spring 2002

IBO, "Diploma Programme curriculum Core requirements," www.ibo.org/diploma/curriculum/core/knowledge

"Theory of Knowledge (IBO course)," http://en.wikipedia.org/w/index.php?title=Theory_of_knowledge_(IB_course)&printable=...

Joanna Walters, "All American trouble," *Guardian*, March 14, 2006, www.guardian.co.uk/education/2006/mar/14/schools.schoolsworldwide.print

"Defining Critical Thinking," www.criticalthinking.org; see also Bellevue Community College, "Critical Thinking Definition," http://bellevuecollege.edu/lmc/ilac/critdef.htm

Coralie Cogswell, "Students Need a Course in Thinking," *Today's Education*, Vol. 58, November, 1969

Edward de Bono, *Teach Your Child How to Think*, Viking, 1992

Wendy McElroy, *The Reasonable Woman: A Guide to Intellectual Survival*, Prometheus Books, 1998

Adele M. Stan, "Shocking: High school grads twice as likely to be jobless as college grads—and right-wingers are profiting from their pain," Nov. 28, 2009, www.alternet.org/module/printversion/144219

Religion causes most wars: Phil Hegedusich, Letter to editor, *Wired*, January, 2007

Laura J. Spencer, *Winning through Participation*, Kendall/Hunt, 1989

Larry Froelich, talk to Rapid Responders, Fayetteville, AR, March 6, 2010

"Consensus Decision Making," www.actupny.org/documents/CDdocuments/Consensus.html

Jan Hargrave, "Do you speak body language? Mastering the art of nonverbal communication key in interrogations," *Forensic Examiner*, Fall, 2008, http://findarticles.com/p/articles/mi_go1613/is_3_17/ai_n28566083/

Daniel H. Pink, *A Whole New Mind*, Riverhead Books, 2005

Carolina, "Quick guide on group dynamics in people's assemblies," http://takethesquare.net/2011/07/31/quick-guide-on-group-dynamics-in-peoples-assembli...

OWS general assembly: Hendrik Hertzberg, "A Walk in the Park," *The New Yorker*, Oct. 17, 2011

Part Two: Human Unity Consciousness

Carl Haub, "How Many People Have Ever Lived on Earth?" Population Reference Bureau, Oct. 2011, http://www.prb.org/Articles/2002/HowManyPeopleHaveEverLivedonEarth.aspx **Haub dispels a recent myth that 75% of all people who have ever lived are alive today. The figure is more like 6%.**

There are currently six taxonomic kingdoms recognized in the U.S., 3 of which are composed of very simple creatures. The others are fungi, plants, and animals.

James A. Shapiro, "A Third Way," *Boston Review*, Feb/March 1997, http://www.bostonreview.net/BR22.1/shapiro.html

Chapter 6: Across Generations

Art Hobson, "The Arrogance of Creationism," *Northwest Arkansas Times*, July 5, 2008

Dan P. McAdams, "Generativity, the New Definition of Success," *Spirituality and Health*

Tom McMahon, "Families Hand Down Good, Bad," October 21, 2008

John Kotre, "Generativity: Finding yourself in order to help others," *Science and Theology News*, September 22, 2005

"Pay It Forward," http://en.wikipedia.org/w/index.php?title=Pay_it_forward&printable=yes

David DeGraw says that workers aged 55 to 60, after working for 20-29 years, have lost an average 25% of their 401k fund, www.alternet.org/module/printversion/144109

AmeriCorps: Ann Sanner, AP, April 1, 2009

Heather Hahn, "Arkansan builds schools in Haiti," *Arkansas Democrat-Gazette*, May 14, 2008

Mo Ibrahim: *The Guardian*, Oct. 26, 2006; Maria Hegstad, AP, Oct. 27, 2006

Robert Kuttner, "The Future of the Corporation," *New York Times*, Nov. 22, 2007, www.informationclearinghouse.info/article18761.htm

Michael Edwards, "Philanthrocapitalism: after the goldrush," Open Democracy, March 19, 2008

Kavita N. Ramdas, "Philanthrocapitalism in denial," Open Democracy, April 2, 2008

Matthew Bishop, Michael Green, "Philanthrocapitalism: the defense," Feb. 12, 2010, www.opendemocracy.net/print/50282

Ginny Olson, "Fish Guts and Pig Intestines: Rites of Passage for Adolescent Girls," July 2006, www.youthspecialties.com/freeresources/articles/adolescent_development/fish_guts.php

Robert Moore and Douglas Gillette, *The Warrior Within*, Avon Books, 1992

Ian Elwood, "Rites of Passage," *WireTap*, July 28, 2006, www.wiretapmag.org/authors/7336

Paul Hill, Jr., "Harvesting New Generations: Afrocentric Rites of Passage," www.ritesofpassage.org/df99-articles/harvest.htm

Emma Young, "Old Friends," *New Scientist*, April 20, 2001, www.newscientist.com/article.ns?id=dn651&print=true

http://greenseniors.typepad.com/greenseniors, April 3, 2008

Father Vitale: *LA Times* in *Sojurners*, April 9, 2009, SojoMail@sojo.net

www.grayisgreen.org

NorthWest Earth Institute, www.nwei.org

see also the Canadian website www.forourgrandchildren.ca

Purpose Prize: AARP, March&April, 2009

Jonathan C. Lewis of Microcredit Enterprises mentions the "capitalized concepts" of "Doing Well by Doing Good," Social Venture Philanthropy," " Serving the Bottom of the Pyramid," "Blended Value Investing," "Double and Triple Bottomlines" which "capture a broad and important idea about applying the tools and efficiencies of the marketplace to intractable social problems" e.g., philanthrocapitalism

www.inthewake.org/b1cooking.html

Fritjof Capra, "Eco Literacy," *Adbusters*, Jan/Feb 2005

Chapter 7: The Places We Live

Peter Berg, "Bioregionalism (a definition)," www.diggers.org/freecitynews/_disc1/00000017.htm

Lewis Thomas, "Antareus in Manhattan*," Lives of a Cell: Notes of a Biology Watcher*, Penguin, 1978

Nano-scale: Andrew Bridges, AP, October 11, 2006

Douglas W. Tallamy, *Bringing Nature Home*, Timber Press, 2007

Our Forests, Our Future: Tristram Korten, "When the Rivers Rise," *Sierra,* March/April 2012

Kirkpatrick Sale, *The Human Scale*, Coward, McCann &Geoghegan, 1980

Erika Kinetz, "Skyscraper boom harbinger of doom, analyst says," AP, Jan. 15, 2012

Timothy Beatley, *Native to Nowhere: Sustaining Home and Community in a Global Age*, Island Press, 2004

Review by Bill Hendrickson, "Green Urbanism," *Issues in Science and Technology*, Summer 2005

Kari McGinnis, "Great Commons of the World," *Yes! A Journal of Positive Futures*, Summer 2001

Dutch study of green space effects: *Journal of Epidemiology and Community Health,* in *Parade,* Dec. 13, 2009

UK parks: www.citymayors.com/environment/uk_parks.html

Jeremijenko: www.oneatlantic.net/archives/cat_tools_and_tech.html

Bat tubes: www.cherwell-dc.gov.uk/index.cfm?articleid=4477
Jennifer Price, *LA Times*, in Richard Luov, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, Alonquin Books, 2005
 Janet Frankston, "Meadowlands: a Hidden Gem," AP, Oct. 30, 2006
Neil Peirce, "Do Sustainable Cities Have a Future?" *The American Prospect*, Feb. 21, 2007, www.alternet.org/story/47728
Ralph C. Thornton, "The Early History of the Forest Preserve District of Cook County, 1869-1922, www.fpdcc.com/tier3.php?content_id=4
Peter Crane and Ann Kinzig, "Nature in the Metropolis," *Science*, May 27, 2005
Kristin Hohenadel, "All His Rooms Are Living Rooms," *New York Times*, May 3, 2007, www.nytimes.com/2007/05/03/garden/03blanc.html
"Folkewall," http://en.wikipedia.org/w/index.php?title=Folkewall&printable=yes
Vertical gardens: www.thegrowspot.com/know/f5/vertical-gardens-living-walls-53838.html; www.environmentalgraffiti.com/ecology/15-living-walls-vertical-gardens-sky-farm...; See color pictures at thegrowspot.com and environmentalgraffiti.com
Green roofs: www.thegrowspot.com/know/f5/green-roofs-living-roofs-around-world-54142.html; http://greenroofs.wordpress.com/2008/08/21/patrick-blancs-vertical-garden/
Marq de Villiers, *The End: Natural Disasters, Manmade Catastrophes, and the Future of Human Survival*, St. Martin's, 2008
"Introduction to Parkour," Parkour US, www.parkour.us/
"Parkour," http://en.wikipedia.org/w/index.php?title=Parkour&printable=yes
Violet Snow, "Free to Move," *Energy Times*, Nov/Dec 2009; www.wfpf.com
Jaclyn Law, "Run, Jump, and Roll," *Ode*, Sept. 2005
"Parkour," http://en.wikipedia.org/wiki/Parkour
Commons the game: http://www.comeoutandplay.org/events/event/commons/
Ed Grabianowski, "How Urban Gaming Works," http://adventure.howstuffworks.com/outdoor-activities/urban-sports/urban-gaming4.htm/pr
Keith Stuart, "The rise of urban gaming," http://www.guardian.co.uk/technology/gamesblog/2009/oct/28/games-gameculture1 http://ludocity.org/wiki/Main_Page
To urbaneer: to creatively engage with and explore the physical environment present in an urban context (buildings, streets, parks, waters, people, places, etc). Urbaneer can also be the person creatively engaging the city.
"Flash Encampments," http://www.adbusters.org/blogs/adbustersblog/flash-encampments.html
Edmund P. Fowler, Ellen LaConte, "Occupiers are all about the meaning of place," http://transitioninaction.com
Guerrilla Gardening Organization, (UK) http://www.guerrillagardening.org/
Cindy McNatt, "Stealth Gardeners Upgrade Public Dirt," *The Orange County Register*, March 24, 2012
LorraineTurner, "Guerrilla Gardeners Take on Irish Ghost Estates," Reuters, March 28, 2012, http://www.reuters.com/article/2012/03/28/us-ireland-gardening-idUSBRE82R0O720120328
"Guerrilla Gardening—Brightening the City Streets," http://www.spottedbylocals.com/blog/guerilla-gardening-brightening-the-city-streets/

Chapter 8: Green Education

Wieklinski: Tracie Dungan, "Lecturer touts less tech, more nature for children," *Arkansas Democrat-Gazette*, Jan. 8, 2012
Robert Michael Pyle, in Richard Luov, "A Walk in the Woods," *Orion*, March/April 2009
Edward Miller and Joan Almon, *Crisis in the Kindergarten*, www.allianceforchildhood/org/newsroom
Bruce Henderson, "Waning Interest, Funds Imperil Park in Smokies," *Charlotte Observer*, Sept. 20, 2009
Children and Nature Network: http://www.childrenandnature.org
Books about children and nature: Michael Pyle, *The Thunder Tree*; Joseph Cornell, *Sharing Nature with Children*
Robin C. Moore and Herb H. Hong, *Natural Learning*, in Luov
Finnish children: "Harper's Index," *Harper's*, Sept. 2012, citing Eurydice (Brussels) and OECD (Paris)
Lowell Monke, "Unplugged Schools," *Orion*, Sept/Oct. 2007, www.orionmagazine.org/index/php/articles/article/334/
Erin Coughlin, *E Magazine*, July/August 2006
Brian Fellows," Safe Routes to School," *Orion*, www.orionmagazine.org/index.php/articles/article/434
Samantha Cleaver, "Green Schools Offer Healthier Classrooms—and Might Boost Test Scores," *Plenty Magazine*, Oct. 29, 2007, www.alternet.org/module/printversion/65857
Evie Blad, "Green Schools a Growing Concept," *Arkansas Democrat Gazette*, Nov. 24, 2008
www.ecoschools.org/countries/countries.htm
John Gatto, *Dumbing Us Down*, New Society Publishers, 1992

Chapter 9: Before and after History

Jim Foley, "Homo floresiensis: the Hobbit," www.talkorigins.org/faqs/homs/flores.html
Dr. David Whitehouse, "Genetic study roots humans in Africa," Dec. 6, 2000, http://news.bbc.co.uk/2/hi/science/nature/1058484.stm
BBC News, "Genetic 'Adam never met Eve,'" Oct. 30, 2000, http://news.bbc.co.uk/2/hi/science/nature/999030.stm
BBC News, "Europe's seven female founders," April 19, 2000, http://news.bbc.co.uk/2/hi/science/nature/719376.stm

Bushmen: jochebed2, www.guardian.co.uk/science/story/0,,2064707,00.html

3,000 generations: I divided 60,000 years by a 20-year generation.

Jim Carnes, editor, *Teaching Tolerance*, Fall 2000

Jared Diamond, *Guns, Germs, and Steel*, Norton, 1999

Jill Neimark, "Meet the New Human Family," *Discover*, May 2011

How many generations have passed since Homo erectus evolved: I divided 1,500,000 years by a generation of 15 years, based on the assumption that these earliest ancestors lived shorter lives.

George Weber, Toba Volcano, chapter 5 of Human Evolution, http://andaman.org/BOOK/originals/Weber-Toba/ch5_bottleneck/textr5.htm

One supervolcano lies under Yellowstone Park.

"Study Says Near Extinction Threatened People 70,000Years Ago," AP, April 24, 2008, www.nytimes.com/aponline/us/AP-Close-Call.html?_r=2&ei=5088&en=d5d2421bd

LiveScience Staff, "Ancient Volcano's Devastating Effects Confirmed," www.livescience.com/history/091204-toba-super-volcano.html?utm_source=feedburn...

"Toba catastrophe theory," http://en.wikipedia.org/w/index.php?title=Toba_catastrophe_theory&printable=yes

Marq de Villiers, *The End*

BBC, "Supervolcanoes," Feb. 3, 2000, www.bbc.co.uk/science/horizon/1999/suprvolcanoes.shtml

Edward R. Dewey, "What are Cycles?" www.ray.tomes.biz/dewey.htm

Aldo Leopold, *Sand County Almanac*, 1949

"What is IK" and "Why Is Indigenous Knowledge Important"? www.worldbank.org/afr/ik.htm

David Maybury-Lewis, *Indigenous Peoples, Ethnic Groups, and the State*, Allyn & Bacon, 1997

Survival International says (2012) that there are over 150 million tribal people. Their definition of 'tribal people' may differ from Maybury-Lewis's definition of indigenous people (300 million). Hopefully the disparity does not reflect an actual halving of numbers in 15 years, but certainly these groups are endangered.

"Survival International, http://en.wikipedia.org/w/index.php?title=Survival_International

"Uncontacted Peoples," http://en.wikipedia.org/wiki/Uncontacted_peoples

Ladislaus M. Semali and Joe L. Kincheloe, eds., Introduction, *What Is Indigenous Knowledge?Voices from the Academy*, Falmer Press, 1999

Roger Osborne: William Grimes, "Hurtling through History at the Speed of Enlightenment," *New York Times*, Dec. 7, 2008, www.nytimes.com

Sam L.J. Page and Helan E. Page, "Western hegemony over African agriculture in Southern Rhodesia and its continuing threat to food security in independent Zimbabwe," Agriculture and Human Values, Sept. 1991, www.springerlink.com/content/w05844w577486703/

Resurgence, Sept-Oct 2008, *Utne Reader*, Jan-Feb 2009

"Indigenous Knowledge for Development Results," http://web.worldbank.org; Aislynn Griffin, "The Importance of Indigenous Knowledge," www.mnh.si.edu/biodiversity/aislynn1.htm

Wealthy have less natural knowledge: "Rich but Dim," *Ecologist*, March 2008

Seed, Sept-Oct 2008, *Utne Reader*, Jan-Feb 2009

Reading and writing as boundary of civilization: ironically, westerners seem to be losing some of their own literacy abilities to the seduction of electronic visual media.

Society for Ecological Restoration International, "Traditional Ecological Knowledge (TEK)"

Morton Hunt, *The Natural History of Love*

Aurignacian, http://en.wikipedia.org/wiki/Aurignacian

Pallab Ghosh, "'Oldest musical instrument' found," BBC New, June 25, 2009, http://news.bbc.co.uk/2/hi/8117915.stm Dr David Whitehouse, BBC News Online science editor, "Woven cloth dates back 27,000 years," June 14, 2000, http://news.bbc.co.uk/2/hi/science/nature/790569.stm

Bruce Sterling, "Imaginary Gadgets 0001," *Wired,* February 6, 2009, www.wired.com/beyond_the_beyond/2009/02/imaginary-gadge/

Reconstructed Antikythera device by clockmaker Michael Wright: www.youtube.com/watch?v=4eUibFQKJql

John Seabrook, "Fragmentary Knowledge: Was the Antikythera Mechanism the world's first computer?" *The New Yorker*, May 14, 2007

"Antikythera mechanism," http://en.wikipedia.org/w/index.php?title=Antikythera_mechanism&printable=yes

Robert Kaplan, "What is the origin of zero?" www.sciam.com/print_version.cfm?articleID=000A41D6-B959-1C719EB7809EC...

"History of Indian science and technology," http://en.wikipedia.org/w/index.php?title=History_of_Indian_science_and_technology&p...

Prehistoric dentists: Mark Henderson, "Stone Age Dentists Used Hand Drill with Rock Bit," *The Times*, April 12, 2001, www.goldenageproject.org.uk/123dentists.html

Calvin College, "About Petra: The Nabataeans," www.calvin.edu/petra/about/nabataeans.php

Emory Dean Keoke and Kay Marie Porterfield, *Encyclopedia of American Indian Contributions to the World*, Facts on File, 2002

Peter James and Nick Thorpe, *Ancient Inventions*, Ballantine Books, 1994

Emma Young, "Drowned Indian city could be world's oldest," January 18, 2002,
www.newscientist.com/article.ns?id=dn1808&print=true
Badrinaryan Badrinaryan, "Gulf of Cambay Cradle of Ancient Civilization," www.archaeologyonline.net/artifacts/cambay.html
 "9,500-Year-Old City Found Underwater off India," http://news.bbc.co.uk/2/hi/south_asia/1768109.stm
Tom Housden, "Lost City Could 'Rewrite History,'" January 19, 2002
Tarini J. Carr, "The Harappan Civilization," www.archaeologyonline.net/artifacts/harappa-mohenjodaro.html
Slides of Harappan artifacts: www.harappa.com/indus3/index.html
"History of the excavation," www.catalhoyuk.com/history.html
Ian Hodder, "This Old House," *Natural History*, June, 2006,
http://nhmag.com/master.htm?http://nhmag.com/060/0606_feature.html
"Ruins of 7,000-year-old city found in Egypt oasis," Agence France Presse, January 29, 2008
Andrew Lawler, "Central Asia's Lost Civilization," *Discover*, November 2006
K. Kris Hirst, "Caral: The Earliest Civilization in the New World,"
http://archaeology.about.com/od/southamerica/a/caral.htm?p=1
"Pre-Columbian trans-oceanic contact," http://en.wikipedia.org/w/index.php?title=Pre-Columbian_trans-oceanic_contact
"Chauvet Cave," http://en.wikipedia.org/wiki/Chauvet_Cave
Robert Silverberg, "The Handprints on the Wall," *Asimov's Science Fiction*, May 1997

Chapter 10: A Species among Species
Temple Grandin and Catherine Johnson, *Animals Make Us Human*, Houghton Mifflin Harcourt, 2009
Margi Prideaux, "Dolphins as Persons?" Jan. 22, 2010, www.opendemocracy.net/print/49937
Thomas I. White, *In Defense of Dolphins: The New Moral Frontier*
Randy Dotinga, "Babies Can Comprehend 'Canine' Language," HealthDay News, July 24, 2009
"The Current Mass Extinction," www.pbs.org/wgbh/evolution/library/03/2/1_032_04.html
"Chipko movement," http://en.wikipedia.org/wiki/Chipko_movement
Participating consciousness: Morris Berman, *The Reenchantment of the World*
William H. Calvin, "The Cerebral Symphony," www.williamcalvin.com/bk4/bk4ch4.htm
Clive Hamilton, "Dualism and Sustainability," *Ecological Economics*, August 2002)
Sharon Warner, "An epistemology of 'participating consciousness,"
www.findarticles.com/p/articles/mi_qa3783/is_199804/1i_n8799504/print
Elizabeth A. Grady, "From Technical Rationality to Participating Consciousness," *Social Work*, July 1994
Larry Gates, "Nature Mysticism," 2004, http://hummingbirdworld.com/spiritnature/index.html
Mike King, "Nature Mysticism in the writings of Traherne, Whitman, Jefferies and Krishnamurti,
http://web.ukonline.co.uk/mr.king/writings/essays/essaysukc/natmysta.html
Michael P. Garofalo, "Nature Mysticism, Quotes," www.gardendigest.com/mystl.htm
Arne Naess, "The Shallow and the Deep, Long-Range Ecology Movement," *Inquiry* (Oslo) 1973
Paul Perry, "The Shallow and the Deep," summary of Arne Naess,
http://www.alamut.com/subj/ideologies/pessimism/Naess_deepEcology.html
Alan Atkisson, interview with Michael E. Zimmerman, "Introduction to Deep Ecology," *In Context*, Summer 1989,
www.context.org/ICLIB/IC22/Zimmerman.htm
"Deep ecology," http://en.wikipedia.org/w/index.php?title=Deep_ecology&printable=yes
A Deep Ecology Eight-Point Platform," www.haven.net/deep/council/eight.htm
Bill Devall and George Sessions, *Deep Ecology*, Gibbs M. Smith, 1985
Deep ecology background: Baruch Spinoza, Ralph Waldo Emerson, Henry Thoreau; Aldo Leopold, *A Sand County Almanac*, Ballantine Books, reissued 1991; Rachel Carson, *Silent Spring*, Houghton Mifflin, 1962; Theodore Roszack, *Person/Planet: The Creative Disintegration of Industrial Society,* Doubleday, 1978; Lewis Mumford, *The Myth of the Machine,* Harcourt, Brace & World, 1967, *The Pentagon of Power,* Harcourt Brace Jovanovich, 1970
"Wilderness," http://en.wikipedia.org/wiki/Wilderness
By the definition of Conservation International, the planet is 46% wild, while the Wildlife Conservation Society estimates that 26% of Earth's land mass is still wild. An IUCN/UNEP report found that only about 11% of Earth's landmass is truly protected as either a Strict Nature Reserve or Protected Wilderness.
 Oil under taiga: http://www.ran.org/oilreport/russia.html
 "Taiga Biological Station, Frequently Asked Questions," March 23, 2010, http://wilds.mb.ca/taiga/tbsfaq.html
"The Taiga or Boreal Forest," http://www.marietta.edu/~biol/biomes/boreal.htm
"Northern Boreal Forest Is Intensely Affected by Global Warming," http://news.softpedia.com/news/Northern-Boreal-Forest-is-Intensily-Affected-by-Global-Warming-37861.shtml
Crystal Hoshaw, "Ode to Blue Ventures," *Ode*, May/June 2012
Julia Whitty, "The Power of One," *Mother Jones*, May/June 2012

Part Three: The Color Green
Thrivability Institute, http://www.wiserearth.org/organization/view/ae0bd742e3f05f44566e59c6c343b00a

Thrivability, http://www.appropedia.org/Thrivability

Chapter 11: Visions and Strategies
"Forty-one Future Problems," *The Futurist*, October, 1977
Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed*, Viking, 2005
William R. Catton, *Overshoot,* 1980
 George Monbiot, "An Overall Assessment of Copenhagen," *Guardian*, Dec. 15, 2009
 James Truslow Adams, *Epic of America*, 1931, "American Dream," Wikipedia; "What Is the American Dream?"
http://memory.loc.gov/lern/lessons/97/dream/thedream.html
Greek election June 17, 2012: *The Christian Science Monitor Weekly,* July 2, 2012
Marina Kamenev, "Rating Countries for the Happiness Factor," *Business Week*, October 11, 2006,
www.businessweek.com/print/globalbiz/content/oct2006/gb20061011_072596.htm
Lauren Sherman, "World's Happiest Places: Canada Made It, U.S. Didn't," Forbes.com, May 15, 2009,
http://abcnews.go.com/print?id=7585729
 "Quality-of-Life Index," http://en.wikipedia.org/w/index.php?title=Quality-of-Life_Index&printable=yes
"Genuine Progress Indicator," http://en.wikipedia.org/w/index.php?title=Genuine_Progress_Indicator&printable=yes
"Genuine Progress Indicator," www.rprogress.org/sustainability_indicators/genuine_progress_indicator.htm
"Happy Planet Index," http://en.wikipedia.org/w/index.php?title=Happy_Planet_Index&printable=yes
 Bill McKibben, "The Enigma of Kerala," *Utne Reader*, March-April, 1996
 Karma Phuntsho, "Bhutan's unique democracy: a first verdict," April 2, 2008, www.opendemocracy.net/node/36149/print
Pamela Chang, "Bhutan's Secret for Happiness," *Yes! A Journal of Positive Futures*, Spring 2006
 "Military of Costa Rica," http://en.wikipedia.org/w/index.php?title=Military_of_Costa_Rica&printable=yes
"List of countries without armed forces,"
http://en.wikipedia.org/w/index.php?title=List_of_countries_without_armed_forces&print...
"University for Peace," http://en.wikipedia.org/w/index.php?title=University_for_Peace&printable=yes
"The U.S. Association for the University of Peace,"
http://en.wikipedia.org/w/index.php?title=The_U.S._Association_for_the_University_for_P
"UK only 74th, but Costa Rica tops 'Happy Planet Index,'" www.neweconomics.org/gen/happyplanetindex040709.aspx
Landon Thomas Jr., "Thriving Norway Provides an Economics Lesson," *New York Times*, May 14, 20009,
www.nytimes.com/2009/05/14/business/global/14frugal.html?_r=3&em=&pagewant...
Sarah Gilbert, "Norway's Success in Socialism has me Turning Red with Envy," *Daily Finance*, May 19, 2009,
www.informationclearinghouse.info/article22652.htm
"Oil," http://introengelsk.cappelendamm.no/c35054/artikkel/vis.html?tid=35350
Sophie Blakemore, "Wales To Be 'Self-Sustaining in Energy," www.worldchanging.com/archives/010202.html
 Jon Lamb, "Food, poverty and ecology: Cuba & Venezuela lead the way," February 2, 2005,
http://www.greenleft.org.au/node/33278
Eugene Linden, "The Nature of Cuba," *Smithsonian*, May 2003,
http://www.smithsonianmag.com/travel/The_Nature_of_Cuba.html
PBS Newshour, "Debt-free doctors part of Cuba's foreign policy strategy," December 22, 2010,
http://www.pbs.org/newshour/bb/health/july-dec10/cuba_12-22.html
"Health Tourism in Cuba," http://www.havana-guide.com/health-tourism.html
Nunavut and Greenland: Colin Woodard, *American Nations*, Viking 2011
"Nunavut," http://en.wikipedia.org/wiki/Nunavut
"Nunavut Parks," http://www.nunavutparks.com/
"Greenland," http://en.wikipedia.org/wiki/Greenland
"Kingdom of Denmark Strategy for the Arctic 2011-2020,"
http://uk.nanoq.gl/~/media/29CF0C2543B344ED901646A228C5BEE8.ashx, pp23-37
"Global Gender Gap," http://www.weforum.org/issues/global-gender-gap
Kira Cochrane, "Is Iceland the best country for women?" *Guardian,* Oct. 3, 2011,
http://www.guardian.co.uk/world/2011/oct/03/iceland-best-country-women-feminist/print
 New Zealand: *Adbusters*, March/April 2009
Roland Kelts, "What's Wrong with Being the World's No. 2?" *Adbusters*, January/February 2011.
"Self Sufficiency Economy in Thailand,"
http://ekh.unep.org/files/SELF%20SUFFICIENCY%20ECONOMY%20IN%20THAILAND.doc.
Sanitsuda Ekachai, "Self-sufficiency economy by own money," *Bangkok Post*, Sept. 7, 2000, www.appropriate-economics.org/asia/thailand/self_sufficiency_economy.htm
Yifat Susskind, "11 Solutions to Halting the Environmental Crisis, Oct. 31, 2007, www.alternet.org/module/printversion/66451
Richard Black, "'Safe' climate means 'no to coal,'" BBC News, 4/29/2009
 John Cairns, Jr., "Choosing Model Nations to Set Examples for Achieving Sustainability," April 16, 2004,
www.mnforsustain.org/model_nations_selecting_criteria_cairns_0404.htm
"Best Practices and Local Leadership Programme (BLP),
www.bestpractices.at/main.php?page=programme/un/overview&lang=en

"15 Ecocities & Villages from Around the Globe," April 25, 2008, www.otbeach.com/news/resorts-and-fun-activities--11/15-ecocities-%26-villages-fro...

George Monbiot, "Bring on the Recession," Independent Media Institute, November 3, 2007, www.alternet.org/module/printversion/66629

Stephen Baxter, *Time's Tapestry*, books 1 and 2, Ace, 2007-2008

"Wicked problem," http://en.wikipedia.org/w/index.php?title=Wicked_problem&printable=yes

3-part strategy: *Utne*, Nov/Dec 2011

www.transitiontowns.org

Ben Brangwyn and Rob Hopkins, "Transition Initiatives Primer, Version 26, August 12, 2008

Rob Hopkins, "10 First Steps for a Transition Town Initiative," Energy Bulletin, Jan. 31, 2007, www.energybulletin.net/node/25464

Judith D. Schwartz, "Communities plan for a low-energy future," *Christian Science Monitor*, Sept. 11, 2008, http://features.csmonitor.com/environment/2008/09/11/communities-plan-%2for-a-low-e...

"Transition Towns," http://en.wikipedia.org/w/index.php?title=Transition_Towns

"Transition United States," www.transitions.org/

"Transition Towns WIKI," www.transitiontowns.org/TransitionNetwork/TransitionCommunities

Open Source Ecology (project)," http://en.wikipedia.org/w/index.php?title=Open_Source_Ecology_(project)

"Global Village Construction Set," http://opensourceecology.org/w/index.php?title=Global_Village_Construction_Set

"The Commoning Game," http://groups.google.com/group/contactsummit/browse_thread/thread/4f9749880138bcb2

Jane McGonigal, *Reality is Broken*, Penguin, 2011

"A Brief Introduction to Alternate Reality Games," http://socialmediatrader.com/a-brief-introduction-to-alternate-reality-games/

"7 things you should know about Alternate Reality Games," www.educause.edu/eli

"World Without Oil," http://en.wikipedia.org/w/index.php?title=World_Without_Oil

"SUPERSTRUCT—World's First Massively Multiplayer Forecasting Game Announced Today," http://iftf.org/node/2318

Dan Kaplan, "Crowdsourcing the future: can alternate realitygame Superstruct help save the world?" Sept. 28, 2008, http://venturebeat.com/2008/09/29/crowdsourcing-the-future-can-alternate-reality-game-superstruct-help-save-the-world/

"Games for Change," http://wikipedia.org/w/index.php?title=Games_for_Change

"2012 Games for Change Awards Nominees Announced," http://www.gamesforchange.org/2012/05/2012-game-for-change-awards-nominees-annou...

"Serious Game," http://en.wikipedia.org/w/index.php?title=Serious_game

Coralie, *The Youtopia Game*, Sweetgum Press, 1993

Dylan Stableford, "'One Day on Earth': Film with footage from every country on earth captured on same day makes its debut," http://news.yahoo.com/blogs/sideshow/one-day-earth-film-footage-every-country-earth-17

Chapter 12: Sustainability

CAFO: World Watch, May/June, 2005

"Increasing Soil Erosion Threatens World's Food Supply," Mar. 23, 2006, Cornell University

Lester R. Brown, *The Futurist*, July-August 2011

Kathy Freston, "13 Breathtaking Effects of Cutting Back on Meat," April 25, 2009, www.alternet.org/module/printversion/137737

Alan B. Durning and Holly B. Brough, "Animal Farming and the Environment," Worldwatch Institute, www.thevegetariansite.com/env_animalfarming.htm

Steve Diver, "Towards a Sustainable Agriculture," *New Renaissance Magazine*, Vol. 6, No. 2, www.ru.org/artagri.html

"Permaculture," Wikipedia

Suzuki also Beus and Dunlap, "Conventional versus alternative agriculture: the paradigmatic roots of the debate," *Rural Sociology* 1990

Agroforestry," http://en.wikipedia.org/w/index.php?title=Agroforestry

Trees for the Future, www.treesftf.org/about/sustain.htm

"Permaforestry," http://en.wikipedia.org/w/index.php?title=Permaforestry

Andie McDaniel, Can We Create a World Without Waste? Jan. 13, 2007, www.alternet.org/module/printversion/46335

Leon Kaye, "Japan's holistic approach to recycling," *The Guardian,* Jan17, 2012, http://www.guardian.co.uk/sustainable-business/japan-recylcing-waste-recovery

Sven Eberlein, "Where No City Has Gone Before: San Francisco Will Be World's First Zero-Waste Town by 2020," April 18, 2012, http://www.alternet.org/module/printversion/155039

"Waste hierarchy," http://en.wikipedia.org/w/index.php?title=Waste_hierarchy

Pamela Hill, "Repair Shops See Boom," *The Morning News*, Dec. 1, 2008

"The Freecycle Network," http://en.wikipedia.org/w/index.php?title=The_Freecycle_Network; besides www.Freecycle.org there is www.Swapthing.com; www.PlanetGreenInc.com will buy worn-out ink-jets, laser cartridges, and cell phones

Mark Anslow, "Reduce, reuse, remanufacture?" *Ecologist*, March 2008

www.remanufacturing.org.uk

U.S. recycling services and businesses listed by http://earth911.org

Technotrash: Tim Paradis, AP, July 13, 2008

Rona Fried, "Turn It Around," *E Magazine*, Sept/Oct 2008
Nell Greenberg, interviewer, "Captain Charles Moore…Talks Trash," Earth Island Institute,
www.earthisland.org/journal/index.php/eij/article/charles_moore/
Daniel Goleman, *Ecological Intelligence: How Knowing the Hidden Impacts of What We Buy Can Change Everything*,
Broadway Books, 2009
Carmel Wroth, "Are You Wearing this Wool? Now you can find out," *Ode*, March 2009
www.green-search.co.uk/green-search.php
Skin Deep Cosmetic Safety Database, www.cosmeticsdatabase,com
Claire Sykes, "Taming the Paper Mail Trail," *Energy Times*, May, 2009
To remove from bulk mail lists: www.dmachoice.org; www.42pounds.org (fee) or http://opt-out.cdt.org or 888-5-OPTOUT
Petition at www.forestethics.org
"Radical transparency," http://en.wikipediaorg/w/index.php?title=Radical_transparency&printable=yes
Ara Darzi and Tom Kibasi, "In Defense of Britain's System," *Washington Post*, August 18, 2009
Marty Makary, MD, *Newseeek,* Sept. 24, 2012, excerpted from *Unaccountable: What Hospitals Won't Tell You and How Transparency Can Revolutionize Health Care*, Bloomsbury 2012
Rashel Tremblay, "Rethinking, Revisiong, and Revisioning the 3Rs," *Natural Life*, July/August 2010

Chapter 13: The Commons

Jonathan Rowe, "Defending the Commons, Defending Life," *Yes! A Journal of Positive Futures*, Spring, 2006; see also David Bollier, *Silent Theft*, Routledge, 2002
Mike Peters, "Mother Goose & Grimm," Jan. 27, 2010
Jeannine Aversa, "American First Woman to Win," AP, Oct. 13, 2009; Ostrom shared the prize with Oliver Williamson
Michael M'Gonigle, "Where There's a Way," *Yes! A Journal of Positive Futures*, Summer 2001
www.forestsandcommunities.org
The New Commons, www.whidbeyinstitute.org
The Trust for Public Land, www.tpl.org
David Bollier, "The Cornucopia of the Commons," *Yes! A Journal of Positive Futures*, Summer, 2001
"Gift Economy," http://en.wikipedia.org/w/index.php?title=Gift_ecoomy&printable=yes
Mark B. Jacobs, "Understanding the Gift Economy," July 9, 2009,
http://memestreamblog.wordpress.com/2009/07/09/understanding-the-gift-economy/, Frieda Warren comment "Economy of the Iroquois," http://en.wikipedia.org/w/index.php?title=Economy_of_the_Iroquois&printable=yes
Mike Shanahan and Eshan Masood, "Biodiversity: Facts and Figures," Dec. 1, 2004, www.scidev.net/en/agriculture-and-environment/features/biodiversity-facts-and-figures.html
Vives, Paine qtd. Rene Heeskens, "Earth Dividend and Global Basic Income: A Promising Partnership,"
www.globalincome.org/English/Earth-Dividend.htm
"Global Basic Income," www.globalincome.org/English/English.html

Chapter 14: Green Higher Education

Brand Blanshard, in Wendy McElroy, *The Reasonable Woman*
Fritjof Capra, "Eco Literacy," *Adbusters*, Jan/Feb 2005
David Orr, in Richard Luov, *Last Child in the Woods*
Bob Sipchen, "The Wizard of Oberlin," *Sierra*, September/October, 2012
www.livingroutes.org
 www.naage.com
Global Ecovillage Network, www.gaia.org
"What is an Ecovillage?" http://gen.ecovillage.org/about/wiaev.php
Mike Henderson and Nritijuna Naidu, Ecovillages: A Model Life?" *Ecologist*, May 2008
www.gensenegal.org
Brianna Cayo Cotter cited in Brita Belli, "Cleaner, Greener U.," *E Magazine*, March/April 2008
Top 10 ranking green universities: Avital Andrews, "Measuring Up," *Sierra*, September/October 2012
Alana Klein, "Green Expectations," February, 2005, http://www.universitybusiness.com/viewarticle.aspx?articleid=429
 Nancy Benac and Trevor Tompson, "AP poll: Most students stressed, some depressed," AP, May 21, 2009,
http://news.yahoo.com/s/ap/20090521/ap_on_re_us/us_college_poll_depression/print
Jonathan M. Orszag and others, "Learning and Earning: Working in College," *Upromise*, August 2001,
www.brockport.edu/career01/upromise.htm
Sarah Seltzer, "Did the University of Colorado Release James Holmes from its Watch before Looking at Him?" 7-26-2012,
http://www.alternet.org/print/hot-news-views/did-university-colorado-release-james-holme...
 Jason Peters, "Destined for Failure," *Orion*, November/December 2008,
www.orionmagazine.org/index.php/articles/article/3648)
Winberg Chai, letter to *Newsweek*, September 24, 2012

Tom Jagtenberg and David McKie, *Eco-Impacts and the Greening of Post-Modernity*, Sage 1997

Ecological economics: See A. Jansson, et al, editors, *Investing in Natural Capital: The Ecological Economic Approach to Sustainability*, Island Press, 1994

Galbraith interview: *Adbusters*, March/April 2009

Joseph Stiglitz, "On Standing up to the Economics Establishment," *Adbusters*, Sept/Oct 2009

Classical economics is under attack academically from chaos and complexity theorists, feminists, economic historians, and social researchers investigating real-world economic behavior, among others.

Behavioral economics: Jeremy Mercer, "Getting to the Heart of Money," *Ode*, May, 2009

"True Cost Economics Manifesto," *Adbusters*, Jan/Feb 2009, www.truecosteconomics.org

Robert Costanza, "A Paradigm Shift in Economics," Adbusters, Jan/Feb 2005

Steve Keen, "The Creative Destruction of Neoclassical Economics," *Adbusters*, March/April 2009; Textbook diagnostic tool: *Adbusters*, Sept/Oct 2009; "Toxic Textbooks," http://toxictextbooks.com

Herman Daly, in *Adbusters*, Sept/Oct 2009

Mikael Stenmark, "What Is Scientism?" *Religion Studies* 33, Cambridge University Press, 1997, http://journals.cambridge.org

Richard Dawkins, *The Selfish Gene*, 1989

Brian J. Ford, *The Secret Language of Life*, Fromm International, 1999

Paul Dayton and Enric Sala, paper for *Scientia Marina*, cited by Luov

Kevin Mulligan, Peter Simons, and Barry Smith, "What's Wrong with Contemporary Philosophy?" *Topoi,* 25 (1-2), 2006

Christopher Jonathan Ott, *The Evolution of Perception and the Cosmology of Substance: a simpler theory of everything*, iUniverse, 2004

Josh McDowell, in "Postmodernism," http://en.wikipedia.org/w/index.php?title=Po;stmodernism&printable=yes; Shannon Weiss & Karla Wesley, "Postmodernism and Its Critics," www.as.ua.edu/ant/Faculty/murphy/436/pomo.htm

Jordan Romanus, "the end of philosophy," *Adbusters*, March/April 2009

Materialist explanatory power: David Ray Griffin points out five "hard-core common sense" notions that are difficult to explain according to current scientific thought: our experience of time as irreversible, our experience of consciousness, our experience of mind and body mutually influencing each other, our experience of genuine freedom of choice, and our experience of moral, religious, and aesthetic beauty..

"Center for a Post Modern World," www.coe.tamu.edu/~pslattery/documents/PMworld.pdf

David Ray Griffin, "The Reconstructive Post-Modern Worldview," Esalen Conference, Nov. 14-19, 1999, www.esalenctr.org/display/confpage.cfm?confid=5&pageid=65&pgtype=1

Richard Conn Henry, "Concept the Mental Universe," *Nature,* July 7, 2005

Nicholas F. Gier, "Is the New Physics Really Mystical?" www.class.uidaho.edu/ngier/mysticism.htm

Chapter 15: Sustainable Cities

Bernice Yeung, "An Introduction to Urban Planning," *Dwell*, October, 2008

ICLEI: Ron Scherer, "In emissions battle, US cities vie to be 'greenest,' *Christian Science Monitor*, October 25, 2006, www.csmonitor.com

"Cool Cities: Solving Global Warming One City at a Time," www.sierraclub.org/coolcities

Drew Pogge, "Welcome to Neutral Town," *E Magazine*, Sept/Oct, 2008

Neil Peirce, "Do Sustainable Cities Have a Future?" *The American Prospect*, Feb. 24, 2007, www.alternet.org/module/printversion/47728

Ed Mazria: Christopher Hawthorne, "Emerald Cities, a Blueprint for Greener Living," *Sierra*, January/February 2009

L.A. Streetcars: Andrew Dalton, AP, April 9, 2012

Erica Barnett, "Turns Out, Seattle Isn't So Green: How About Your City?" Nov. 21, 2006, www.alternet.org/story/44352

Jessica A. Knoblauch, "Chicago's Green Plan," *E Magazine*, Jan/Feb 2009; Greg Nickels, "Climate of hope: US cities lead the way," BBC News, http://newsvote.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/6366349.stm

Peter Frick Wright, *Sierra*, January/February, 2009

Dara Colwell, "Green Roofs: Building for the Future," www.alternet.org/module/printversion/48530

"Green Roofs and Living Roofs from Around the World," www.thegrowspot.com/know/f5/green-roofs-living-roofs-around-world-54142.html

Nigel Dunnett, Dusty Gedge, John Little & Edmund C, Snodgrass, *Small Green Roofs*, Timber Press, 2011

Los Angeles greening: Sarah van Gelder, "Why the Next 10 Years Will Be Nothing Like the Last 10 Years," *Yes! A Journal of Positive Futures*, Spring 2006

LA LED retrofit: *Natural Life*, May/June 2009

NYC green plans: Matt Crenson, AP, May 27, 2007

Tara Lohan, "What's the Big Hubbub over a New Book Arguing NYC Is America's Greenest City? www.alternet.org/module/printversion/143261

Grist, "Do You Live in One of the World's 15 Greenest Cities?" July 27, 2007, reprinted November 22, 2008, www.alternet.org/module/printversion/57973

Maldives: "In the news," *Arkansas Democrat-Gazette*, March 16, 2009

The Going Carbon Neutral Project, www.goingcarbonneutral.co.uk

James Kachadorian, excerpt from *The Passive Solar House*, Chelsea Green, 2009, www.alternet.org/module/printversion/144004

Mr. Electricity: www.michaelbluejay.com/electricity/cooling.html

Susan Susanka, *Creating the Not So Big House*, Taunton Press, 2000

"Passive Solar Architecture—Heating," Arizona Solar Center, www.azsolarenter.com/technology/pas-2.html

 James E. Houck, et al, "Air Emissions from Residential Heating: The Wood Heating Option Put into Environmental Perspective," Proceedings of a U.S. EPA and Air Waste Management Association Conference, 1998

Sustainable wood heating: www.carlaemery.com/newsletter23.htm

Geothermal heating: www.geoexchange.org/about/how.htm

Geothermal Schools: *The Morning News* editorial, Springdale, Arkansas, Dec 30, 2006

www.geoexchange.org/incentives/incentives.htm

www.energystar.gov/index.cfm?c=geo_heat.pr_geo_heat_pumps

"Small-Scale Cogeneration-CADDET 1," American Council for an Energy-Efficient Economy

"Cogeneration," Wikipedia

MIT: http://cogen.mit.edu/

"District Heating," www.energy.rochester.edu/dh/

Andrew Tolve, "Hot ideas from a cold climate," *Ode*, January/February 2009

Electric bill: www.eia.doe.gov

"Solar Chimney," Wikipedia

"Earth cooling tubes," Wikipedia

"Earth Cooling Tubes," www.eere.energy.gov/consumer/your_home/space_heating_cooling/index.cfm

Arizona Solar Center, "Natural Cooling," www.azsolarcenter.com/technology/pas-3.html

Andy Lubershane, "Earthly Ideas, White Roofs," Aug. 24, 2009, www.worldchanging.com/archives/010385.html also Kool Roof: Marshall Magruder & Roads white: Dennis Michael Ripley

Arthur Max, "Company Captures Road Warmth," AP, Jan.1, 2008

Shade tree: Ask Mr. Electricity, www.michaelbluejay.com/electricity/cooling.html

Builders: www.oldhouseweb.com/stories/Detailed/725.shtml

"Solar air conditioning," http://en.wikipedia.org/w/index.php?title=Solar_air_conditioning&printableyes

Susan Weiner, "Preserving the Night," *Energy Times*, Nov/Dec 2009

Only10% have a clear view of sky: National Parks Conservation Association, www.npca.org

International Dark Sky Association, www.darksky.org

Map of night skies: www.koshland-science-museum.org/exhib_lightsatnight/

William E. Moritz, Ph.D., "A Survey of North American Bicycle Commuters," Jan. 24, 1997, www.bicyclinglife.com/Library/Moritz1.htm

Bicycle commuters: www.cheef.org/commuting_statistics.html

Bike survey: www.kenkifer.com/bikepages/survey/commuter.htm

Julie A. Varughese, "Keeping Bikes on the Road," *E Magazine*, May/June 2009

National Bike Month: http://www.bikeleague.org/programs/bikemonth/

Blumenauer: *Parade* magazine, November 23, 2008

Bicycle rental: Christine Spolar, *Chicago Tribune*, August 10, 2008

Rolf Priesnitz, "Pedaling Bike Power, *Natural Life Magazine*, Sept/Oct 2008

Priesnitz says U.S. cities with bike-sharing planned or set up include San Francisco, Houston, Tucson, San Antonio, Portland, Cambridge, and Boulder.

Lloyd Alter, "They Are Building Bicycle Superhighways in Copenhagen," August, 2009, www.treehugger.com/files/2009/08/copenhagen-bicycle-superhighways.php

"Bicycle Blueprint: a plan to bring bicycling into the mainstream in New York City," www.transalt.org/blueprint/chapter 9/chapter9c.html

For an illuminating bike culture blog see www.Copenhagenize.com

 Erin Coughlin, "Power to the Pedicabs," *Discover,* May/June 2006; see also www.pedicab.com/pedicabs.html

www.bikesatwork.com

"The New Cycling Revolution," *Natural Life*, July/August 2010

Bicycle commuting: http://www.bikecommutetips.blogspot.com

Cargo bikes: http://www.cargobikesgallery.com; http://www.tradesmansbike.wordpress.com; http://www.longjohn.org; http://www.PortlandPedalPower.com

"Car-free movement," http://en.wikipedia.org/wiki/Car-free_movement; www.carfree.com; www.worldcarfree.net; www.carbusters.org; www.bicyclecity.com; "Carfree city," http://en.wikipedia.org/w/index.php?title=Carfree_city&printable=yes

"World Naked Bike Ride," www.worldnakedbikeride.org, http://en.wikipedia.org/wiki/World_Naked_Bike_Ride

"List of car-free places," http://wn.wikipedia.org/w/index.php?title=List_of_car-free_places&printable=yes

"New Urbanism," http://en.wikipedia.org/w/index.php?title=New_Urbanism&printable=yes

Sprawl defined: www.state.fl.us/fdi/fscc/news/state/strategy2.htm

 www.commuter-register.org/calc.html

Eric M. Weiss, "Commute Takes Its Toll," *Washington Post*, April 17, 2007

Sierra Club, "Sprawl Costs Us All," www.sierraclub.org/sprawl/report00/schools.asp

Brian Schmidt and Kathy Switky, "CGF using 40-year-old law to prevent sprawl," www.greenfoothills.org/news/2005/06-2005_WilliamsonAct.html

Julia Levitt, "The Ruins of the Unsustainable," Worldchanging, Aug. 3, 2009, www.worldchanging.com/archives/010206.html

Stan Cox, "The Property Cops: Homeowner Associations Ban Eco-Friendly Practices," April 26, 2007, www.alternet.org/story/51001

Jon Hurdle, "U.S. residents fight for the right to hang laundry," http://news.yahoo.com/s/nm/20091118/us_nm/us_laundry/print

Ben Willis, "Julie Brown of Growing Communities," *Ecologist*, June, 2008

"Allotment (gardening)," http://en/wikipedia.org/w/index.php?title=Allotment...(gardening)&printable=yes

Lester Brown, *Plan B 2.0: Rescuing a Planet under Stress and a Civilization in Trouble,* W.W. Norton, 2003

Carl Flatow, "Urban Agriculture and Eating Local, March 16. 2007, www.sciencefriday.com/blog

Nancy Mann Jackson, "Gardens without Borders"

Henkeepers: *Ecologist*, March 2008

James Murdock, "Vertical Food Gardens Spread in L.A.'s Skid Row," http://archrecord.construction.com/news/daily/archives/081007foodgardens.asp

"15 Living Walls, Vertical Gardens & Sky Farms," www.environmentalgraffiti.com/ecology/15-living-walls-vertical-gardens-sky-farm...

"Vertical Farming," http://en.wikipedia.org/w/index.pkhp?title=Vertical_farming&printable=yes

Book Two: Meeting the Big Challenges
Part One: Twio Existential Threats
Chapter 1: Climate Change: General Considerations

IEA warning: Fiona Harvey, "World headed for irreversible climate change in five years, IEA warns," guardian.co.uk, November 9, 2011

"Understanding 350," http://www.350.org/en/node/48

The 11 science academies which signed the 2005 statement were Brazil, Canada, China, France, Germany, India, Italy, Japan, Russia, the United Kingdom, and the United States. "Joint science academies' statement: Global response to climate change," www.nationalacademies.org/onpi/06072005.pdf

Tundra: Michael Reilly, "Arctic Tundra Holds Global Warming Time Bomb," Discovery News, Aug. 25, 2008, http://dsc.discovery.com/news/2008/08/25/warming-arctic-tundra-print.html

Phil McKenna, "Global warming may raise tundra wildfire risk," *New Scientist*, March 2008, 2008, www.newscientist.com/article/dn13408-global-warming-may-raise-tundra-wildfire-r...

IPCC: *Sierra*, Nov/Dec 2009

Julia Whitty, "The Thirteenth Tipping Point," *Mother Jones*, **Nov/Dec 2006 lists 12 GW tipping points (after UK scientist John Schellnhuber): 1. Amazon Rainforest 2. North Atlantic Current 3. Greenland Ice Sheet 4. Ozone Hole 5. Antarctic Circumpolar Current 6. Sahara Desert 7. Tibetan Plateau 8. Asian Monsoon 9. Methane Clathrates 10. Salinity Valves 11. El Nino 12. West Antarctic Ice Sheet**

Drought: *World Watch*, May/June, 2005; Kathy Marks, "Australia's epic drought: The situation is grim," *The Independent*, April 20, 2007

"Climate Change Bringing Australia 'Perpetual Drought," www.earthweek.com/2009/ew090717/ew090717b.html

Matt Weiser, "Drought in '09 may be worst in California history, official say," *Sacramento Bee*, Oct. 31, 2008, www.sacbee.com/capitolandcaliforniastory/1359091.html

Joseph Shapiro, "Greek Island of Crete Suffers Intense Heat, Drought," NPR, August 13, 2007, www.npr.org/templates/story/story.php?storyId=12707473

15 warmest years: Bill McKibben, "How the Mountain of Climate Change Evidence Is Being Used to Undermine the Cause," Feb. 27, 2010, www.alternet.org/module/printversion/145838

"Has the Arctic Melt passed the point of no return?" *The Independent*, Dec. 16, 2008, www.independent.co.uk/environment/climate-change/arctic-melt-passes-the-point-of-no-return-1128197.html

Green Car Congress, "New NASA Satellite Survey Reveal Dramatic Arctic Sea Ice Thinning," July 8, 2009, www.greencarcongress.com/2009/07/nasa-20090708.html

NOAA: www.sierraclub.org/uptospeed

Environmental Defense Fund, "Global Warming Disrupts Insurance Coverage," Nov. 2007, www.environmentaldefense.org/page.cfm?tagID=14044

The 2008 *Climate Change Risk Report* **ranks 168 nations by their vulnerability to global warming.**

Simon Sturdee, "Natural disasters 'killed over 220,000' in 2008," AFP, Dec. 29, 2008

Dan Ray, "Islands: A climate-change canary," April 6, 2007, www.dailycamera.com/news/2007/apt/06/islands-a-climate-change-canary/?printer=1/

Maplecroft (British consultancy specialist in mapping risk), *Climate Change Risk Report,* www.NaturalLifeMagazine.com

Tsvi Bisk, "A Realistic Energy Strategy," *Futurist*, March/April, 2009

Peak Oil confirmed: Mark Hertsgaard, "Running on Empty," *The Nation*, May 12, 2008

Chris Nedler, "Oil Exports May Soon Dry Up," *Futurist*, Mar/April 2009

Steve Gelsi, "Forecasts drop for North Sea Oil Fields," *Marketwatch*, October 6, 2009

The world's top oil producers, top net oil exporting countries, and top oil consumers are rather different lists. According to 2006 DOE figures, the top five oil *producers* are Saudi Arabia, Russia, the United States, Iran, and China. The top five oil *exporters* are Saudi Arabia, Russia, Norway, Iran, and the United Arab Emirates (UAE). The top oil *consumers* are the United States, China, Japan, Russia, and Germany. Note that the United States is the world's third largest producer of oil but its top consumer. Two-thirds of the oil it consumes is imported, a quite unsustainable situation.

Richard Heinberg, *Power Down: Options and Actions for a Post-Carbon World,* New Society Publishers, 2004

Greenhouse gases: International Carbon Bank and Exchange, www.icbe.com/emissions/calculate.asp

UNEP=United Nations Environmental Programme; Greenpeace, "Other Gases," www.greenpeace.org/international/campaigns/climate-change/science/other_gases

Greenpeace fact sheet, "HFCs: The Big Bad Greenhouse Gases You Probably Never Heard Of"

Greenpeace fact sheet, "Natural Refrigerants: The Solution," www.greenpeace.org/usa/assets/binaries/hfc-solutions-fact-sheet www.refrigerantsnaturally.com

Helen Caldicott, *Nuclear Power Is Not the Answer*, New Press, 2006

Rick Docksai, "New Greenhouse Gas Threat," *Futurist*, March/April, 2009

Jessica Seddon Wallack and Veerabhadran Ramanathan, "The Other Climate Changers: Why Black Carbon and Ozone Also Matter," *Foreign Affairs*, September/October 2009

Barefoot College: Natalya Savka, "Make Light," *Sierra*, September/October 2012

Global Alliance for Clean Cookstoves, http://www.cleancookstoves.org

Jake Abrahamson, "Fighting Climate Change with Family Planning," *Sierra*, May/June 2012

"Causes of Global Warming," http://ecobridge.org/content/g_cse.htm

Protest vs. coal Sallisaw, OK: Wanda Freeman, *Fort Smith Times Record*, December 29, 2006

PIRG, Neil Pierce, www.stateline.org

"Rearing cattle produces more greenhouse gases than driving cars, UN report warns," http://www.un.org/apps/news/story.asp?newsID=20772&CR1=warning

FAO, "Livestock a major threat to environment," Nov. 29, 2006, www.fao.org/newsroom/en/news/2006/10000448/index.html

"An Insatiable Appetite," *Ecologist*, March 2009

Lisa Rathke, "Greener diet reduces dairy cows' methane burps," AP June 21, 2009, http://news.yahoo.com/s/ap/20090621/ap_on_re_us/us_burpless_cows/print

Gene C. Sager, "Where's Your Beef From?" *Natural Life Magazine*, Nov/Dec 2008, www.NaturalLifeMagazine.com

"Durban Climate Deal: the verdict," http://www.guardian.co.uk/environment/2011/dec/12/durban-climate-deal-verdict

Tim Gore, "The Durban climate deal failed to meet the needs of the developing world," http://www.guardian.co.uk/global-development/poverty-matters/2011/dec/12/durban-climate-deal-developing-world

TEQ: Stephan Harding, "Intelligent Growth: A Vision for a New Low-Energy Economy, www.alternet.org/story/46179

"Personal Carbon Trading," http://en.wikipedia.org/w/index.php?title=Personal_carbon_trading&printable=yes

David Morris, "What Al Gore Hasn't Told You," www.truthout.org/issues_06/010907EB.shtml

O'Reilly: Thomas Friedman, *Hot, Flat, and Crowded*

Sun-powered motor: www.usinfo.state.gov/gi/Archive/2005/Apr/19-464962.html

Socolow/Pacala, 15 Wedges: others are "Increase wind power eightyfold to make hydrogen for clean cars....Adopt conservation tillage, which emits much less CO_2 from the land, in all agricultural soils worldwide....Drive two billion cars only 5,000 miles per year rather than 10,000, at 30 mpg [with light rail?]....Replace 1,400 large coal-fired electric plants with natural-gas-powered facilities....Raise efficiency at 1,600 large coal-fired plants from 40 to 60 percent....Install carbon capture and sequestration capacity at 800 large coal-fired plants....Install carbon capture and sequestration at new coal plants that would produce hydrogen for 1.5 billion hydrogen-powered vehicles....Install carbon capture and sequestration at 180 coal gasification plants."

Tara Lohan, "Wind vs. Coal: False Choices in the Battle to Resolve Our Energy Crisis," www.alternet.org/story/47997

Survey of 19 countries by University of Maryland's Program on International Policy Attitudes: Paul Rauber, "What, Us Worry?" *Sierra*, November/December 2009

Oil shale: Brad Lemly, "Anything into Oil," *Discover*, April 2006

Oil shale: Kathy Kilmer, The Wilderness Society, May 21, 2009)

Michael Dumiak, "Lifting the Winter Dark," *Scientific American*, April 2006

"U.S. wants to paint the world white to save energy," AFP, May 26, 2009, http://news.yahoo.com/s/afp/climatewarmingusbritainchu; Rooftop reflectors: *Futurist*, May/June 2009

Thomas R. Casten, *Turning Off the Heat: Why America Must Double Energy Efficiency to Save Money and Reduce Global Warming*, Prometheus, 1998

Ambrose Evans-Pritchard, "Monday view: Cheap solar power poised to undercut oil and gas by half," *Telegraph*, Feb. 18, 2007, www.telegraph.co.uk/core/Content/displayPrintable.jhtml;jsessionid=IGHNQMQZVU4DBQFIQM...

Mycle Schneider, "2008 world nuclear industry status report: Global nuclear power," *Bulletin of the Atomic Scientists*, Sept. 2008, www.thebulletin.org/print/web-edition/reports/2008-world-nuclear-industry-status-rep...

Futurist, May/June 2009

Largest sources of uranium oxide: Kazkhstan, Canada, Australia, Malawi, and Namibia. Uranium prices have fallen from phaseout of nuclear power in many countries, and several mining projects postponed. Rupert Neate, "Nuclear power turns to developing world as west recoils from Fukushima," http://www.guardian.co.uk/business/2012/oct/28/nuclear-power-developing-world-west-r

David Fleming: "Negative Energy," *Ecologist*, February, 2008; "Anti-nuclear movement in the United States, http://en.wikipedia.org/w/index.php?title=Anti-nuclear_movement_in_the_United_States...

Daniel Whitten & Hans Nichols, "Obama Said to Seek $54 Billion in Nuclear-Power Loans, Bloomberg News, www.bloomberg.com/apps/news?pid=20601103&sid=aC7VY11v6aMw

NIRS, "A few things most people don't know about Obama's nuclear power loan guarantee program," http://blogs.alternet.org/nirsnet/2010/02/17/a-few-things-most-people-don%E2%80%99t-know-about-obama%E2%80%99s-nuclear-power-loan-guarantee-program/

Harvey Wasserman, "Obama Pledges Billions for 20th Century's Most Expensive Technological Failure—Nuclear Power," Feb. 20, 2010, www.alternet.org/module/printversion/145718

Magazine, "Earth Talk: What Will Make Solar Energy Competitive?" March 20, 2007, www.alternet.org/module/printversion/49141

Joe Provey, "Building Wind Communities," *E Magazine*, Jan/Feb 2009 www.25x25,nonprofitsoapbox.com.storage/25x25/documents/PressReleases/commwind_full_report.pdf

Cheryl Pellerin, "Solar Cells Increasing Use of Electricity from Sunlight," http://usinfo.state.gov/gi/Archive/2005/Apr/19-464962.html

Katie Moyer, "Super Hot Solar Energy," *The Mother Earth News*, Aug/Sept 2006

TREC = the Trans-Mediterranean Renewable Energy Cooperation; www.trec-uk.org.uk/; www.desertec.org/

Peter Fairley, "Europe Backs Supergrids," *MIT Technology Review*, December 2, 2008, www.technologyreview.com/printer_friendly_article.aspx?id=21742&channel=ener...

Chapter 2: False Starts

A January 2012 Pew Research Center survey found Americans ranked global warming 22nd on their list of priorities. Peter Beinart, "What Mitt Should Say," *Newsweek* August 22, 2012

"Nuclear power plants, world-wide," www.euronuclear.org/info/encyclopedia/n/nuclear-powe-plant-world-wide.htm

"Nuclear Power Plants in the World," www.icjt.org/an/tech/jesvetjesvet.htm

Leslie Lai & Kristen Morrison, "Nuclear Energy Fact Sheet," www.wagingpeace.org/menu/issues/nuclear-energy-&-waste/start/fact-sheet_ne&w.htm

Christian Parenti, "What Nuclear Renaissance?" *The Nation*, May 12, 2008

Fredrik Dahl, "Nuclear Safety Standards Conference: There's 'Much More To Be Done', IAEA Chief Urges," Reuters, August 27, 2012

Kyodo, "DPJ vow for next poll: a nuclear phaseout," *Japan Times*, August 14, 2012, http://www.japantimes.co.jp/text/nn20120814a1.html

"Japan pays lip-service to nuclear phase out," *Economist*, September 21, 2012, http://www.winnipegfreepress.com/opinion/westview/Japan-pays-lip-service-to-nuclear-phase-out-70739926.html

"Japan plans end to nuclear, but public still at risk for 18 more years," http://www.greenpeace.org/international/en/press/releases/Japan-plans-end-to-nuclear-but-

Peter Behr, "Germany's Phaseout Puts a Spotlight on the Cost of Its Renewables Strategy," *New York Times*, June 10, 2011, http://www.nytimes.com/cwire/2011/06/10/10climatewire-germanys-phaseout-puts-a-sptl

Gal Luft, "France: Can the 'Lumiere de Monde' Risk a Brown-Out?" *Journal of Energy Security*, August 27, 2012, http://www.ensec.org/index.php?option=com_content&viewaarticle&id=377:france-can-the...

"Report warns of India nuclear power safety, UPI, Aug. 23, 2012, http://www.upi.com/Business_News/Energy-Resources/2012/08/23/

P. Sunderarajan, "Aruna Roy calls for end to installation and commissioning of nucler energy projects," *The Hindu*, August 25, 2012, http://www.thehindu.com/news/national/article3817345.ece

Rosa Tassabehji, "The Middle East Nuclear Power Boom without Toxic Waste Strategy," June 8, 2011, http://www.greenprophet.com/2011/06/middle-east-nuclear-toxic/

Joshua Scheer, "Biodiesel: the Fuel That Doesn't Kill Us," www.alternet.org/story/47367/

Richard Conniff, "The Myth of Clean Coal," June 3, 2008, http://e360.yale.edu/content/print.msp?id=2014

Keith Johnson, "Clean Coal in China: Why It's a Non-Starter," *Wall Street Journal*, Sept. 4, 2009, http://blogs.wsj.com/environmentalcapital/2009/09/04/clean-coal-in-china-why-its-a-non-starter/

Keith Bradsher, "China Outpaces U.S. in Cleaner Coal-Fired Plants," *New York Times*, May 10, 2009, http://www.nytimes.com/2009/05/11/world/asia/11coal.html

Gaia Vince, "Can China create the solutions to our energy problems?" BBC, May 18, 2012, http://www.bbc.com/future/story/20120518-chinas-clean-coal-goal

"China leading global efforts on clean coal," http://www.scidev.net/en/climate-change-and-energy/energy-policy/news/china-leading-global-efforts-on-clean-coal.html

Jeff Biggers, "'Clean' Coal? Don't Try to Shovel That," *Washington Post*, March 2, 2008

Corey S. Powell, interview with Jeffrey Sachs, *Discover,* November. 2006

Art Hobson: personal communication

Lord Turner Adair: "CCS Concerns," *Ecologist*, June 2008; "Avoiding Capture," *Ecologist*, July/August 2008

Pete Spotts, "Trouble with burying CO_2," *Christian Science Monitor Weekly*, July 2, 2012

Robert McIntyre, "Algae's Powerful Future," *The Futurist*, March-April 2009

Dennis Bushnell, "Algae: A Panacea Crop?" *The Futurist*, March-April 2009

Mark Anslow, "Slippery Territory," *Ecologist*, April 2008

"Algae Fuel," http://en.wikipedia.org/w/index.php?title=Algae_fuel&printable=yes

Evan Ringquist, "Nuclear Is Not Competitive," McClatchy-Tribune Information Service, *Arkansas Democrat-Gazette,* May26,2009

Spencer Reiss, "Let a Thousand Reactors Bloom," *Wired*, Dec. 2009, www.wired.com/wired/archive/12.09/china_pr.html

MOX: Steve Connor, 'Untested' nuclear reactors may be used to burn up plutonium waste," *The Independent*, August 20, 2012, http://www.independent.co.uk/news/science/untested-nuclear-reactors-may-be-used-to-burn-up-plutonium-waste-8061660.html

Tristan Taylor, "Pebble Bed Modular Nuclear Reactor—a black hole for public funds," Feb. 18, 2009, http://nuclear-news.net/2009/02/20/the-pebble-bed-modular-nuclear-reactor-a-black-hole-for-public-funds/

Hyperion Power Generation," http://en.wikipedia.org/w/index.php?title=Hyperion_Power_Generatin&printable=yes

Jeff St. John, www.greentechmedia.com/articles/print/mini-nuclear-reactor-startup-seeks-up-to-10...

Ethanol industry spokespersons insist that the ratio is better: one unit of fossil fuel produces 1.67 to 2.5 units of ethanol energy. This is still not a large gain, especially if ethanol provides only a fraction of the car's fuel

Cornell University, "Ethanol and Biodiesel from Crops Not Worth the Energy," July 6, 2005

U.S. corn subsidies: Nate Jenkins, AP, Jan. 2007

Robert Pear, "After 30 years, ethanol tax credit expires," *New York Times*, Jan. 8, 2012

David Pitt, "Experts Say Ethanol Threat to Corn Supply," AP, Jan. 2007

Corn prices: Bradley S. Klapper, AP, Jan. 23, 2007

Brazilian ethanol: http://www.economist.com/node/21542431

"Cellulosic ethanol," http://en.wikipedia.org/w/indes.php?title=Cellulosic_ethanol&printable=yes

Erica Gies, "Biodiesel Basics," *E Magazine*, Mar/April 2006

Brad Lemly, "Anything into Oil," *Discover*, April 2006

A pilot plant in Carthage, Missouri turns turkey slaughterhouse waste into fuel oil and the leftovers into high-grade fertilizer. Lemly says this high temperature process can also turn municipal sewage, old tires, mixed plastics, and possibly automobile scrap (after metals are recycled) into 'renewable diesel.' He claims it can dismantle prions, the proteins that cause mad cow disease.

EnCana: *Discover*, December 2006

"Amazon burning worst in memory, another casualty of El Nino," CNN, Oct. 9, 1997

Indira A. R. Lakshmanan, *Boston Globe*, Nov. 27, 2006

Forest Service statistics: "Call of the Wild," *Newsletter of the Newton County Wildlife Association*, Winter 2007 George Imrie, personal communication; he is my son-in-law)

"Amazon Rainforest," Wikipedia)

Chris Hemmings, *Ecologist*, February, 2008

Penang development: "Rainforest saved," *Ecologist*, May, 2008

Economic incentive: "Amazon Rainforest," Wikipedia

"Amazon," Greenpeace

Mark Hertsgaard, "Climate, the Absent Issue," *The Nation*, November 1, 2004

Amy Goodman, *Democracy Now!* "Is Carbon Trading Just a Giveaway to Big Polluters?" Nov. 3, 2007, www.alternet.org/module/printversion/66729

Larry Lohmann, "Carbon Trading Requires Knowledge We Don't Have," www.opposingviews.com/arguments/carbon-trading-requires-knowledge-we-don-t-h...

See Larry Lohmann, ed, *Carbon Trading: a Critical Conversation on Climate Change, Privatization and Power*, Corner House, 2006

Joe McDonald and Charles J. Hanley, "China dams reveal flaws in climate-change weapon," AP, Jan.25, 2009

Julie Walsh, "The Amazonians Speak Out," Dec. 5, 2008, www.openmarket.org/tag/carbon-offsets/

Dashka Slater, "Head Start on Carbon Trading," *Sierra*, January/February 2009

John Lichfield, "Can he fix it? Sarkozy's carbon-tax plan derided by environmentalists," *The Independent*, Sept. 11, 2009

David Morris, "New Proposed Climate Change Bill in Washington Is Simpler and More Equitable," October 2, 2009, www.alternet.org/module/printversion/142970

www.capanddividend.org/?q=readfirst

Cap-and-dividend: Bill McKibben, "How the Mountain of Climate Change Evidence Is Being Used to Undermine the Cause," Feb. 27, 2010, www.alternet.org/module/printversion/145838; See also Peter Barnes, *Climate Solutions*

Peter Barnes, Sky Trust," *Yes! A Journal of Positive Futures*, Summer 2001; Americans for Equitable Climate Solutions, www.aecs.org/Skytrust/index.html

"Climate scientists: it's time for 'Plan B,'" UK *Independent*, Jan. 2, 2009

"20 Weird, Crazy Ideas for Helping the Earth," Nov. 21, 2009, www.alternet.org/module/printversion/144060

Ben Webster. Environment Editor, and Hannah Devlin, "Cloud ships on course to beat climate change, says Copenhagen study," *Times*, August 7, 2009, www.timesonline.co.uk/tol/news/environment/article6742023.ece?print=yes&randnu...

Peter Tucker, "Saving the Planet, One Cloud at a Time, *Futurist*, March/April 2009

"Our 'Life Insurance,'" *Ecologist*, April, 2008

Sergey A. Zimov, "Pleistocene Park: Return of the Mammoth's Ecosystem," *Science*, May 6, 2005

"Buffalo Commons," http://en.wikipedia.org/wiki/Buffalo_Commons
David Samuels, "Where the Buffalo Roam," *Mother Jones*, March/April 2011

Chapter 3: Meeting the Energy Challenge
National renewable energy standard: Michael Brune, "Comon Ground," *Sierra*, September/October 2012
Ian Sullivan, "Copenhagen verdict: Historic moment, historic gathering, historic cop out," Dec. 19, 2009,
www.oxfam.org.uk/applications/blogs/pressoffice/?p=9517
"Apollo Alliance," http://en.wikipedia.org/w/index.php?title=Apollo_Alliance&printable=yes
"Gore challenges US to ditch oil," BBC News, http://news.bbc.co.uk/2/hi/7513002.stm
"Al Gore: A Generational Challenge to Repower America," www.wecansolveit.org/content/pages/304
David Biello, "Gore challenge: 100 percent renewable power in 10 years," July 17, 2008,
www.scientificamerican.com/blog/post.cfm?id=gore-challenges-nation-on-energy-us-2008-07-17
LED light bulbs: www.tinyurl.com/6fxkf5
New crystals for LEDs: *Popular Mechanics*, June 2011
www.lightuptheworld.org
www.energystar.gov/index
 "Energy Star," Wikipedia; www.energystar.gov.au/
Alex Hutchinson and Sarah Fecht, "Energy Fixes," *Popular Mechanics*, June 2011
Clean Diesel Fuel Alliance, http://www.clean-diesel.org/environ_health.htm l
Rachel Clode, "Keeping up with the smarts," *Ecologist*, May, 2008)
Van sharing website: www.freightalerts.co.uk, *Ecologist*, February 2008
Lisa Hammersly, "Freighting model touts environmental, profit-raisng perks," *Arkansas Democrat Gazette*, October 19, 2012
"Cities to store wind power for later use," AP, Jan. 4, 2006, www.msnbc.msn.com/id/10695864/
Laylan Copelin, "Firm to use Texas caverns to store extra wind energy," Cox Newspapers, April 15, 2012
Gemasolar, Seville: Alex Hutchinson and Sarah Fecht, *Popular Mechanics*, June 2011
Maggie Koerth Baker, "Sunshine in a Bottle," *Discover*, June 2009
 J.D. Underwood, "Energy storage—4 ways utilities and users can reduce electricity cost,"
www.osti.gov/energycitations/product.biblio.jsp?osti_id=5062519)
Andrew Grant, "Assault on the Battery," *Discove*r, June 2009
Better battery: Harper's Index, *Harper's* magazine, October 2008
"EEstor," http://en.wikipedia.org/wiki/EEStor
"New Battery Could Be Solar Power's BFF," http://money.cnn.com/video/technology/2012/08/16/bsg-liquid-metal-battery-energy.cnnmoney
Toshiba battery: http://www.toshiba.co.jp/about/press/2005_03/pr2901.htm
"Polaris Labs to bring new battery technology to market," http://www.sustainablebusinessoregon.com/articles/2012/08/polaris-labs-to-bring-new-battery.html?page=all
Sugar battery: Scripps Howard News Service, March 26, 2007
Pebble-bed reactors and hydrogen: Bill Kaczor, AP, October 5, 2009
Flywheel discussion: www.greenhybrid.com/discuss/f15/extreme-plug-flywheel-hybrid-promises-possible...)
Art Hobson, "The sensible thing: Envisioning rail transit in Northwest Arkansas," *Northwest Arkansas Times*, July 18, 2009)
Sam Hopkins, "Yet Another Train Wreck No One's Following," Wealth Daily, June 29, 2009)
John Liffert, "Chicago's rail bottleneck poses dilemma for Buffett," Bloomberg News, Feb. 14, 2010)
Prof. Hobson says trains should replace air flights that are less than 600 miles
Cahal Milmo, "Jet-setters pledge to ditch air travel to save the environment,"
http://news.independent.co.uk/environment/article2255665.ece; Mark Anslow, "Can Flying Ever Be Green?" *Ecologist*,
July/August, 2008
 Ian Herbert, Ben Russell and Andy McSmith, "Planes, trains, and the road to ruin," *The Independent*, Jan. 3, 2007,
http://news.independent.co.uk/uk/transport/article2121672.ece
Jacqueline Savitz, "Cruise Control," *Ecologist*, April 2008
Earthjustice, "EPA Forces Ships to Clean Up," Dec. 22, 2009, www.earthjustice.org/news/press/2009/epa-forces-ships-to-clean-up.hml?print=t
Sailing ships: http://sailtransportnetwork.com/
Dmitry Orlov, "The new age of sail," Culture Change/ Energy Bulletin, August 20, 2006,
http://www.energybulletin.net/node/19396
Marianne Lamers, "Fair Trade means fair transport," *Ode*, May/June 2012
Shipping comparisons: http://business.tenntom.org/why-use-the-waterway/shipping-comparisons/
Shipping cost comparisons, Arkansas Waterways Commission: Lisa Hammersly, "Groups want ports on Arkansas River,"
Arkansas Democrat Gazette, Dec. 25, 2011
 Cain Burdeau, AP, July 12, 2009
Jimmy Lee Shreeve, "Canal Boat Living: Rise of the Eco River Gipsy," *Telegraph*, Nov. 26, 2008,
www.telegraph.co.uk/earth/greenerliving/3526321/Canal-boat-living-Rise-of-the-eco-river-gipsy.html
"SOLON SE Launches First Solar-powered Passenger Ship for Berlin," http://news.enf.cn/en/news/news_9979.html

"Solar Boats," www.solarmobil.net

Next 25 years of cars: *Ecologist*, Feb. 2008, p. 8

"Click and Clack Talk Cars," Sept. 22, 2006

"2009's Top-20 selling vehicles in U.S. through February," www.theautochannel.com/news/2009/03/04/452436.html; http://images.businessweek.com/ss/08/05/0519_top_sellers/index_01.htm)

Driver deaths: www.edmunds.com; Hampton Gabler and William Hollowell, "The Aggressivity of Light Trucks and Vans in Traffic Crashes," U.S. National Highway Traffic Safety Administration, Document 980908, March 1998

University of Michigan transportation study: www.sierraclub.org/uptospeed

Amory Lovins, "Design as if nature matters," www.resurgence.org/resurgence/issues/lovins213.htm; Paul Hawken, "Hypercar," *Mother Jones*, Mar/Apr 1997; www.mindfully.org/Sustainability/Hawken-Hypercar.htm; *Carbonomics*, http://zfacts.com/p/909.html

"Growing Innovative Vehicles," *Natural Life* magazine, Sept/Oct 2008

The rebellious states on CAFÉ were California, Connecticut, Maine, Massachusetts, New Jersey, New Mexico, New York, Oregon, Rhode Island, Vermont, New York City, and the District of Columbia.

Brad Knickerbocker, "A push for cars to get better gas mileage," *Christian Science Monitor*, May 8, 2006

California waiver: www.sierraclub.org/uptospeed

Joseph R. Szczesny, "Environmentalists Not All Happy about New EPA Guidelines," *Time,* September 21, 2009, http://news.yahoo.com/s/time/20090921/us_time/08599192499700/print

Tom Krisher & Matthew Daly, "New Mileage Standards Would Double Fuel Efficiency," *Seattle Times*, August 28, 2012, http://seattletimes.com/html/politics/2019008271_apusobamafueleconomy.html

Tara Lohan, "Obama Announces the Most Significant Measure to Get Off Oil by Any U.S. President in Four Decades," 8-28-2012, http://alternet.org/print/hot-news-views/obama-announces-most-significant-measure-...

"Greening the Fleet," University of Toronto, 2003

Traffic gridlock: *San Francisco Chronicle*, Dec. 10, 1996, http://ecobridge.org/content/g_cse.htm

Smart car crash test: www.youtube.com/watch?v=ju6t-yyoU8s

Smart car: *E Magazine*, Jan/Feb 2009

"Smart [automobile]," Wikipedia

Jitendra Joshi, "Lilliput car heads for land of giant trucks," Agence France Presse, Jan. 8, 2007

Phil Hazlewood, "World's cheapest car hits Indian streets," AFP, July 17, 2009

European Nano: www.autobloggreen.com

Wuling: Erika Kinetz, AP, July 2009

Bloomberg News, "GM's low-cost minivans selling hot in China, dominate market," Aug. 30, 2009

"Electric Cars," Wikipedia

Volt: Democrat-Gazette Press Services, *Arkansas Democrat-Gazette*, August 12, 2009

See the film "Who Killed the Electric Car?" at www.imdb.com/title/tt0489037/; **also see** http://dontcrush.com/

Reed McManus, "Electric cars get ready to take over the road, quietly and powerfully," http://www.sierraclub.org/sierra/201211/electric-car-buying-guide-271.aspx

"Plug-in electric vehicle," http://en.wikipedia.org/wiki/Plug-in_electric_vehicle

"Electric vehicle production," Wikipedia; www.greencarsite.co.uk www.treehugger.com/files/2006/10/the_smart_ev_co.php; Makiko Kitamura & Megumi Yamanaka, "Electric-car snag: Spot to plug in," Bloomberg News, Aug. 31, 2009

Electric cars: *Ode*, October, 2008

"'Extreme' Plug-In Flywheel Hybrid Promises a Possible 250 MPG," Feb. 23, 2005, www.greencarcongress.com/2005/02/Idquoextremerdq.html; "Alternative Propulsion," and "Green Vehicles," Wikipedia

Brett Davis, "Tata Motors Mini CAT Air Car to debut in 2012," Oct. 17, 2011, http://www.caradvice.com.au/141944/tata-motors-mini-cat-air-car-to-debut-in-2012 /

John Walsh, "Batteries included: Are eco-friendly cars any good?" *The Independent*, June 29, 2009, http://license.icopyright.net/user/viewFeeUse.act?fuid=NDAyNDk0OA%3D%3D; see also www.greencarcongress.com/2009/07/calstart-20090709.html; www.greencarcongress.com/2009/07/revolt-20090709.html and

Billy Baker, "The Race to 100 mpg," *Popular Science*, Sept. 2006

Resonant magnetic coupling: "Innovate: Electricity in the Air," *Sierra*, September 2012

EPA Power Profiler: http://1.usa.gov/powerprofiler

"US wants to paint the world white to save energy," AFP, May 26, 2009, http://news.yahoo.com/s/afp/climatewarmingusbritainchu

Thomas R. Casten, *Turning Off the Heat: Why America Must Double Energy Efficiency to Save Money and Reduce Global Warming*, Prometheus, 1998

Joe Provey, "The Promise of Wind," *E Magazine*, Jan/Feb 2009

"American Wind Power Reaches 50-Gigawatt Milestone," news release from The American Wind Energy Association, http://www.power-eng.com/news/2012/08/09/american-wind-power-reaches-50-gigawatt-

Midwestern wind farms: Alan Scher Zagler, AP, Nov. 5, 2006

Winona LaDuke, "Local Energy, Local Power," *Yes! Magazine*, Winter 2007

Ron Rebenitsch, "Wind Energy: Power from the Prairie," *Futurist*, Jan/Feb 2007

Wind turbine noise: http://www.renewableenergyworld.com/rea/news/article/2010/11/measuring-wind-turbine-noise

Power grid: see Thomas Friedman, *Hot, Flat, and Crowded*
Connect wind farms: *Ecologist*, February 2008
Jennifer Santisi, "Bringing the Wind In," *E Magazine*, Jan/Feb 2011
"Building the Foundation for Offshore Wind Energy," http://atlanticwindconnection.com/
"Cost of electricity by source," http://en.wikipedia.org/wiki/Cost_of_electricity_by_source
AWC Investors: http://www.goodenergies.com/files/files/view/508
Cheryl Pellerin, "Solar Cells Increasing Use of Electricity from Sunlight," http://usinfo.state.gov/gi/Archive/2005/Apr/19-464962.html
Denis Hayes, "The Sooner We Get Serious, the Better," July 11, 2004
"University of California Passes Ground-Breaking Clean Energy Policy, www.greenpeace.org/usa/news/university-of-california-passe
Katie Moyer, "Super Hot Solar Energy," *The Mother Earth News*, Aug/Sept 2006
Desertec: www.trec-uk.org.uk/; www.desertec.org/
Joseph Romm, "The technology that will save humanity," April 14, 2008, http://www.salon.com/2008/04/14/solar_electric_thermal/
Geothermal electricity: Marla Dickerson, *Los Angeles Times*, November 10, 2008
Advances help tidal energy: Neil Pierce, Stateline.org, August 9, 2006
Jeannette J. Lee, "Tidal energy companies staking claims," *Seattle Post-Intelligencer*, Nov. 4, 2006
Wave power: see also www.oceanrenewable.com
 "The Next Wave in Energy," *Environmental Defense Fund Solutions*, Summer 2009
Mark Anslow, "Pumping It Up," *Ecologist*, June 2009; www.searaser.com
Bill W. Hornaday, "Turbine project draws doubts," *Arkansas Democrat-Gazette*, May 7, 2009
VIVACE: *Futurist*, March/April 2009; www.ns.umich.edu
OTEC research: http://www.economist.com/node/21542381; http://www.ioes.saga-u.ac.jp/en/about_lab.html; http://www.niot.res.in/projects/desal/desalination_introduction.php; http://www.bluerise.nl/; http://en.dcnsgroup.com/energy/marine-renewable-energy/ocean-thermal-energy/
Arnold Veilbrief, "Out of the Blue," *Ode*, March 2009
Micropower: www.micropower.co.uk/about/whatismicropower.html; www.micropower.co.uk/about/whymicropower.html; "Microgeneration," Wikipedia
UPS cuts carbon: www.greencarcongress.com/2009/07/ups-20090708.html
Alan Bellows, "The Gravity-Powered Aircraft," March 31, 2006, www.damninteresting.com/?p=359
 Dave Demerjian, Solar Plane Set to Soar over Europe," April 3, 2009, www.wired.com/autopia/2009/04/solar-plane-to/
"NASA Dryden Fact Sheet—Pathfinder Solar-Powered Aircraft," www.nasa.gov/centers/dryden/news/FactSheets/FS-034-DFRC.html
Joseph C. Yater: www.rexresearch.com/yater/yater.htm
Tom Entham, "Bureaucracy Keeps Energy Tool Untested," *San Francisco Sunday Examiner and Chronicle*, July 1, 1979
LaFarge: *Ode*, October 2008
David Ferris, "Innovate: Train to Tomorrowland," *Sierra Magazine*, January/February 2012
"Thermal Electric Generator (TEG)", http://hmguevara.wordpress.com/2009/11/09/thermal-electric-generator-teg
Thomas Valone, Ph.D., P.E., "Feasibility Study of Zero-point Energy Extraction from the Quantum Vacuum for the Performance of Useful Work," c. 2004, PDF
"ZPE Referances," [sic] www.panacea-bocaf.org/ZPEReferances.htm
Eco-Cement: *Sierra*, January/February 2009; www.tececo.com
EDF, "Guilt-free rice," *Solutions*, Summer 2009
Sohbet Karbuz, "US Military Oil Pains," *Energy Bulletin*, February 17, 2007, www.energybulletin.net/print.php?id=26194
Lisa Mastny and Brian Halweil, "State of the World 2004: The Consumer Society—An Overview," www.worldwatch.org/node/1532
Plastics use 3% of petroleum: www.polystyrene.org/faqs/anwers.htm
Linda Baker, "The Service Economy," *E Magazine*, Mar/Apr 2006
www.flexcar.com; "Zipcar: Green Benefits," www.zipcar.com/carsharing-greenbenefits/
John Naish, "Born to Shop?" *Ecologist*, February, 2008
Philip Martin, "Pain Is Real, But Our Problems Are Trivial," *Arkansas Democrat-Gazette*, December 14, 2008
"Sad People Shop," *Ecologist*, February, 2008
"Households by Type and Size: 1900 to 2002," U.S. Census Bureau, Statistical Abstract of the United States 2003
Moya K. Mason, "Housing: Then, Now, and in the Future," www.moyak.com/researcher/resume/papers/housing_summary.html
Size of homes: *Ecologist*, March 2009
Kenneth R. Tremblay, Jr. and Lawrence Von Bamford, editors, *Small House Designs*, Storey Communications, 1997
U.S. home double size Europe, Japan: *Dwell*, March 2008
Sarah Susanka, *Creating the Not So Big House*, Taunton Press, 2000
"Sarah Susanka's Not So Big Showhouse at International Builders Show 2005," Nov. 15, 2004, www.world-wire.com/news/1115040001.html

Kevin Salwen, "Why We Gave Away Our Home," *Parade*, Jan. 17, 2010; see Kevin and Hannah Salwen, *The Power of Half*, Houghton Mifflin Harcourt, 2010

Angela Bryant Starke, "A Home Bigger Than a Breadbox? Just Barely," *AARP Bulletin*, July/Aug 2007

Clare Dudman, "Boxhome*," Dwell*, March 2008

Steve Grant, "Home Sweet 144-Square-Feet Home," *Hartford Courant*, October 6, 2008

www.resourcesforlife.com/groups/smallhousesociety; www.tinyhousedesign.com; www.tumbleweedhouses.com; www.thejewelboxhome.com; www.tinytexashouses.com; www.countryplans.com/contest.html; www.littlehouseonasmallplanet.com

Container homes: Sue Major Holmes, AP, Sept. 25, 2008

Orlo Stitt: *Northwest Arkansas Times*, Dec. 14, 2009

www.globals.gvu.unu.edu/indicator.cfm?IndicatorID=1468&country=US#rowUS

"Sweden Says Yes to No Oil," www.sweden.gov.se/

John Lichfield, "Can he fix it? Sarkozy's carbon-tax plan derided by environmentalists"

Agence France-Presse, "Spain bets on fair winds for energy lift," *International Herald Tribune*, July 23, 2006

Dana Longescu, "Navarra embraces green energy," March 9, 2007, http://news.bbc.co.uk/2/hi/europe/6430801.stm Chris Kahn, "Chinese set to go into solar big-time," AP, September 9, 2009

"The Challenge of India," Environmental Defense Fund Solutions, Summer 2009

Todd Woody, "How Australia Got Hot for Solar Power," *Business 2.0 Magazine*

Chris Powers, "The Largest Wind Power Facility in Central America Planned for Cocle, Panama," *Panama Letter*, August 10, 2012, http://news.liveandinvestoverseas.com/Economy/the-largest-wind-power-facility-in-central...

David Eggert, AP, Aug. 4, 2006

Lana F. Flowers, "Sustainability Center Helps Wal-Mart Green Up," *Northwest Arkansas Times*, Feb. 26, 2010

WalMart details: Matthew McDermott, Feb. 25-2010, http://www.treehugger.com/files/2010/02/walmart-svp-sustainability-fills-more-details-greenhouse-gas-reduction-plan.php

"Top Ten Ways Wal-Mart Fails on Sustainability," http://documents.foodandwaterwatch.org/doc/walmartsustainability.pdf

Jodie Van Horn, "Energy Revolution Blueprint Needs IT to Build Sustainable Foundation," June 22, 2010, http://www.greenpeace.org/international/en/news/Blogs/Cool-IT/energy-revolution-blueprint-needs-it-to-build/blog/12528/

"Turkey's first Energy [R]evolution report proves that it is possible to protect both economy and climate," 2009, http://www.energyblueprint.info/1067.0.html

Justin Guay, "There's an Energy Revolution Brewing in Bihar, India," http://thinkprogress.org/climate/2012/06/01/491810/theres-an-energy-revolution-brewing-i...

"India's Coal Crisis Hits Deep Freeze," http://sierraclub.typepad.com/compass/2012/02/indias-coal-crisis-hits-deep-freeze.html

George Webster, "Solar lamps replace toxic kerosene in poorest countries," CNN, February 1, 2012 http://proceedings.spiedigitallibrary.org/article.aspx?articleid=1235529

"Powering India with Rice Husks? An Interview with Ratnesh Yadav from Husk Power Systems," http://sierraclub.typepad.com/compass/2011/01/powering-india-with-rice-husks-an-intervi...

"Energy Access Entrepreneurs Seek $500 Million from World Bank at Rio+20," http://thinkprogress.org/climate/2012/05/15/483033/energy-access-entrepreneurs-seek-500...

"Rio+20 Earth Summit results in nonbinding declaration with moderate goals," http://www.washingtonpost.com/national/health-science/rio20-earth-summit-results-in-no...

Chapter 4: War, Total War, and Democide

John Horgan, *The End to War*, McSweeney's Books, 2012

Some writers and scholars (e.g., psychologist Steven Pinker) exaggerate the decline in wars over the whole of human history by painting prehistoric people as excessively violent, on the basis of some studies of contemporary hunter gatherers. This often ignores the differences between interpersonal and intertribal violence, differing time frames, differing parts of the world, differing population density between regions, and greater mortalities from wounds before modern medicine.

An example of apples and oranges is the following comparison from *War in Human Civilization* by Azar Gat edited by Roger Sandall. "Even among the Eskimos of the central Canadian Arctic, *who lacked group warfare*, **violent death, in so-called blood feuds and homicide, was estimated by one authority at one per 1,000 per year, 10 times the US peak rate in 1990." Comparing only homicides leaves out violent deaths that may have been caused by U.S. citizens to those of** *other nations* **in overt or covert wars, such as an estimated 205,000 Iraqis in the Gulf War. It also disregards differences in mortality rates from wounding in countries with and without modern medical services. Homicides and war are not comparable indications of some abstract tendency to violence.**

"Global war deaths have been substantially underestimated," *British Medical Journal*, June 19, 2008, http://esciencenews.com/articles/2008/06/19/global.war.deaths.have.been.substantially.unde..

Mark Harrison and Nikolaus Wolf, "The Frequency of Wars," March 10, 2011, PDF

Counterexamples to democratic peace theory include the Boer War, the Spanish-American War, and U.S. covert action against Guatemala and Chile.

Jay Ulfelder, "Economic Growth and the Survival of New Democracies," http://dartthrowingchimp.wordpress.com/2012/02/06/economic-growth-and-the-survival-of-new-democracies/ "War Deaths 1945-2000," http://www.worldmapper.org/display.php?selected=287

"The Federation of American Scientists estimates there are more than 20,500 nuclear warheads in the world as of 2011, with around

4,800 of them kept in "operational" status, ready for potential use." http://en.wikipedia.org/wiki/Nuclear_weapon

"Nuclear Winter," http://www.eoearth.org/article/Nuclear_winter

"Dead Hand (nuclear war)," http://en.wikipedia.org/wiki/Dead_Hand_(nuclear_war) http://www.unicef.org/graca/patterns.htm

"Total War," http://en.wikipedia.org/wiki/Total_war

"The Thirty Years' War," http://www.zeitlerweb.com/30yearswar.htm

"Source List and Detailed Death Tolls for the Primary Megadeaths of the Twentieth Century," *Twentieth Century Atlas,* http://necrometrics.com/20c5m.htm

"Selected Death Tolls for Wars, Massacres and Atrocities Before the 20th Century," http://necrometrics.com/pre1700a.htm#European

"List of wars and anthropogenic disasters by death toll," http://en.wikipedia.org/wiki/List_of_wars_and_anthropogenic_disasters_by_death_toll

Milton Leitenberg, "Deaths in Wars and Conflicts in the 20th Century," 3rd ed., 2006, http://www.cissm.umd.edu/papers/files/deathswarsconflictsjune52006.pdf

"Pax Romana," http://en.wikipedia.org/w/index.php?title=Pax_Romana

Theodore B. Taylor, "Proliferation of Nuclear Weapons," http://www-ee.stanford.edu/~hellman/Breakthrough/book/chapters/taylor.html

Ike Jeanes, *Forecast and Solution: Grappling with the Nuclear*, Pocahantas Press, 1996

"Geneva Conventions," http://en.wikipedia.org/wiki/Geneva_Conventions

"Geneva Conventions," http://www.redcross.lv/en/conventions.htm

"1949 Conventions and Additional Protocols," http://www.icrc.org/ihl.nsf/CONVPRES?OpenView

Knut Dormann, "The Geneva Conventions Today," http://www.icrc.org/eng/resources/documents/statement/geneva-conventions-statement-090709.htm

Zrasul, "The Geneva Conventions and Additional Protocols: Do They Still Work for The New Wars We Face Today?" http://opinionscan.me/2012/03/10/the-geneva-conventions-and-additional-protocols-do-they-still-work-for-the-new-wars-we-face-today/

Owen Bowcott, "Drone strikes threaten 50 years of international law, says UN rapporteur," *The Guardian*, June 21, 2012, http://www.informationclearinghouse.info/article31667.htm

"Protocol 1, Addition to the Geneva Conventions, 1977," http://deoxy.org/wc/wc-proto.htm

Elihu Burritt also founded the still-existing International Law Association in 1873. Mark Weston Janis, "Religion and International Law," http://www.asil.org/insigh93.cfm

Bingbin Lu, "Reform of the International Court of Justice – A Jurisdictional Perspective," *Perspectives*, Volume 5, No. 2, June 30, 2004, http://www.oycf.org/Perspectives2/25_063004/3.pdf

"League of Nations," http://www.historylearningsite.co.uk/leagueofnations.htm

"League of Nations: Successes and Failure," http://www.factmonster.com/ce6/history/A0859217.html

"League of Nations," http://www.encyclopedia.com/topic/League_of_Nations.aspx

David Krieger, "UN Voting on Nuclear Disarmament Shows Abysmal U.S. Record," http://www.wagingpeace.org/articles/2008/02/13_krieger_abysmal_record.php?krieger

Kamrul Hossain, "The Complementary Role of the United Nations General Assembly in Peace Management," *Review of International Law and Politics,* Vol. 4, No: 13, 2008, pp. 77-93, reprinted *The Journal of Turkish Weekly*, July 21, 2012, http://www.turkishweekly.net/article/323/the-complementary-role-of-the-united-nations-general-assembly-in-peace-management.html

Resolution 377 has been used on the following occasions: Hungary in 1956; Lebanon in 1958; Congo in 1960; the Middle East in 1967; and (since 1967) Bangladesh, Afghanistan, South Africa, and Palestine, several times.

Munitions makers: Report of the Special Committee on Investigation of the Munitions Industry (The Nye Report), U.S. Congress, Senate, 74th Congress, 2nd sess., February 24, 1936, pp. 3-13," https://www.mtholyoke.edu/acad/intrel/nye.htm

Major General Smedley Butler, USMC**, "War Is A Racket," S**peech delivered in 1933, http://www.informationclearinghouse.info/article4377.htm

Thomas deBaggio, "The Unholy Alliance," *Penthouse*, May 1977, http://www.thinkorbeeaten.com/theknoll/vzygoth%20unholy.pdf

Edith M. Lederer, "UN fails to reach treaty to regulate arms trade," AP July 28, 2012

Peter Cohan, "The NRA Industrial Complex," Forbes, July 27, 2012, http://www.forbes.com/sites/petercohan/2012/07/23/the-nra-industrial-complex/

"Disarmament," Oxford Dictionary of Politics, http://www.answers.com/topic/disarmament#ixzz21wgMyv8s]

"Arms Control and Disarmament - History - Weapons, Nuclear, War, and Power," http://law.jrank.org/pages/4438/Arms-Control-Disarmament-History.html#ixzz21eZ694yf

"Molotov's Recent Proposal Is a Repeat Performance of an Old Russian Game," Milwaukee Journal, November 15, 1946, http://news.google.com/newspapers?nid=1499&dat=19461115&id=E8AcAAAAIBAJ&sjid=Wn4EAAAAIBAJ&pg=4348,7755276

Matthew M. Oyos, "Jimmy Carter and SALT II: THE PATH TO FRUSTRATION," Part 4. Strategic Arms Control Negotiation**,** http://www.unc.edu/depts/diplomat/AD_Issues/Amdipl_2/Oyos_4.html

"United Nations Peace Operations," http://www.un.org/en/peacekeeping/publications/yir/yir2010.pdf

"U.S. pays off much of U.N. arrears, now owes $736 million," Reuters, Jan. 25, 2011, http://www.reuters.com/article/2011/01/25/us-un-usa-arrears-idUSTRE70O7DW20110125

Edward Marks,"The US and the UN: The Reform Trap," *American Diplomacy*, April 2001, http://www.unc.edu/depts/diplomat/archives_roll/2001_03-06/marks_UNreform/marks_UNreform.html

"U.S. Senator Berates UN," BBC News, Jan. 21, 2000, http://news.bbc.co.uk/2/hi/americas/612594.stm

Anti-UN politicians such as Sen. Jesse Helms make much of the fact that the U.S. is the largest single financial contributor to UN peacekeeping at 27.17%, (assessed) or 25% (capped by Congress) but the four nations UK, Germany, France and Italy together contribute 29.05% although their combined populations are 82% that of the United States. Thus they contribute quite a bit more per capita.

Mark Goldberg, "The Coming Peacekeeping Crunch," *American Prospect*, May 21, 2007, http://prospect.org/article/coming-peacekeeping-crunch

Refugees International, "Last Line of Defense: How Peacekeepers Can Better Protect Civilians," Feb. 24, 2010, http://www.refugeesinternational.org/policy/in-depth-report/last-line-defense

Steven Rocker, "The Clear and Present UN Peacekeeping Resource Crunch," http://www.american.edu/sis/usfp/upload/Steven-Rocker-SRP-FINAL.pdf

Hazel Henderson, *Building a Win-Win World*, Berrett-Koehler, 1996

Hazel Henderson, "Education for the Third Millennium: Looking Back from 2050"

Cost of American wars: http://www.strategypage.com/htmw/htproc/20100723.aspx

Stephen Daggett, Specialist in Defense Policy and Budgets, "Costs of Major U.S. Wars," Congressional Research Service, June 29, 2010, http://www.fas.org/sgp/crs/natsec/RS22926.pdf

Military Keynesianism: http://www.websters-online-dictionary.org/definitions/Keynesianism

Stephen I. Schwartz. "Cold War's Heavy Cost," letter to the editor *New York Times*, May 20, 1999, http://www.nytimes.com/1999/05/20/opinion/l-cold-war-s-heavy-cost-770728.html

"Nuclear Power and Nuclear Weapons," http://www.neis.org/literature/Brochures/weapcon.htm

Anup Shah, "World Military Spending," May 2, 2011, http://www.globalissues.org/article/75/world-military-spending#InContextUSMilitarySpendingVersusRestoftheWorld

Arms Trade: http://www.globalissues.org/article/74/the-arms-trade-is-big-business#Armssalesfigures

Joel E. Cohen and David E. Bloom, "Cultivating Mind**s,"** *Finance and Development*, June 2005, http://www.imf.org/external/pubs/ft/fandd/2005/06/cohen.htm

The term *democide* was first used by Theodore Abel in 1951 then revived by R.J. Rummel in the 1990s.

Enough, the project to end genocide and crimes against humanity: http://www.enoughproject.org/

"Definitions of democide," http://en.wikipedia.org/wiki/Genocide_definitions

Terminology used for mass killings: "Mass killings under Communist regimes," http://en.wikipedia.org/wiki/Mass_killings_under_Communist_regimes

"Political Ponerology," http://www.ponerology.com/

"Ponerology," http://en.wikipedia.org/wiki/Ponerology

The *DSM---Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition Revised, American Psychiatric Association, 2000—has subsumed psychopathy under the diagnostic category "Antsocial Personality Disorder" which has some differences with Lobaczewski's use of the term psychopathy. The *DSM* seems only to consider criminally-inclined individuals working around or against the legal authority whereas Lobaczewski discusses psychopathic individuals who may also work within the legal framework and indeed sometimes become the legal authority themselves. The *DSM* says about 3% of males and 1% of females exhibit Antisocial Personality Disorder while Lobaczewski says about 5% of the population are psychopathic in his broader sense.

Łobaczewski, Andrzej, *Political Ponerology: A Science on the Nature of Evil Adjusted for Political Purposes*, Red Pill Press, 2006

Chapter 5: Nuclear Disarmament

Dietrich Fischer, foreword to Ike Jeanes, op. cit.

NRDC, "U.S. nuclear forces, 2006," www.thebulletin.org/article_nn.php?art_ofn=jf06norris; www.society.at/website/magazine.php?aid=133

"Civil Nuclear Power and Nuclear Weapons Proliferation," http://www.no2nuclearpower.org.uk/reports/Civil_Nukes_Proliferation.pdf

Oliver Morton, "The Dream That Failed," *The Economist*, March 10, 2012, http://www.economist.com/node/21549098

"Collective Security," http://en.wikipedia.org/wiki/Collective_security

Mordchai Shualy, "The Future Nuclear Powers You Should Be Worried About," www.foreignpolicy.com/articles/2009/10/20/the_future_nuclear_powers_you_shou...

David Krieger, "Meeting the Russell-Einstein Challenge to Humanity," www.wagingpeace.org/articles/2004/10/00_krieger-meeting-russell-einstein-challenge.htm

Harper's Index, *Harper's*, Oct. 2008, from International Institute for Strategic Studies

"Report: Obama to offer Russia deal to cut nuclear arms by 80%," *Haaretz Service and News Agencies*, Feb. 4, 2009, www.haaretz.com

"Peace - Muslim, Hindu, and Buddhist Traditions," http://science.jrank.org/pages/10618/Peace-Muslim-Hindu-Buddhist-traditions.html

Moral Opposition to Nuclear War: Ike Jeanes, *Forecast and Solution*, Pocohantas Press, 1996, pp. 443-499

Sharbani Banerji, "Against the Indo-US Nuclear Deal,"
www.zmag.org/content/print_article.cfm?itemID=9960&sectionID=1

G.D. Bakshi, *The Indian Art of War: The Mahabharata Paradigm (Quest for an Indian Strategic Culture)*, Delhi, Sharada, 2002

Einstein Interview, *Nieuwe Rotterdamsche Courant*

"Russell-Einstein Manifesto," www.pugwash.org/about/manifesto.htm

"Russell-Einstein Manifesto," Wikipedia

Martin Rees, "Dark Material," Rotblat Memorial Lecture, June 13, 2006

David Krieger and Frank K. Kelly, *Waging Peace II: Vision and Hope for the 21st Century*, Noble Press, 1992

James Fuller, "Verification on the Road to Zero: Issues for Nuclear Warhead Dismantlement,"
http://www.armscontrol.org/act/2010_12/%20Fuller

"National technical means of verification," http://en.wikipedia.org/w/index.php?title=National_technical_means_of_verification

Alexander Zaitchik, "Experts Predict a Possible Terrorist Strike with a Nuke in the US by 2013—What Can We Do to Stop It?"
December 16, 2008, www.alternet.org/module/printversion/113115

See also Richard Rhodes, *Arsenals of Folly: The Making of the Arms Race*

Beth Buczynski, "Oil-Soaked Saudi Arabia Sets Goal of 100% Renewable Energy,"http://www.care2.com/causes/oil-soaked-saudi-arabia-sets-goal-of-100-renewable-energy...

"Nuclear program of Saudi Arabia," http://en.wikipedia.org/wiki/Nuclear_program_of_Saudi_Arabia

'Nuclear-free zone," http://en.wikipedia.org/wiki/Nuclear-free_zone

Obama statement of nuclear policy, *Arms Control Today*, cited Zaitchik

David Krieger and Frank K. Kelly, introduction *Waging Peace II: Vision and Hope for the 21st Century,* Noble Press, 1992

Jefferson on standing armies: http://etext.virginia.edu/jefferson/quotations/jeff1480.htm

"Nuclear Power and Nuclear Weapons," http://www.neis.org/literature/Brochures/weapcon.htm

Thomas Graham Jr., "Avoiding the Tipping Point," *Arms Control Today***, November 2004,**
http://www.armscontrol.org/act/2004_11/BookReview

William Pfaf, "America Owned by Its Army," Nov. 8, 2009, www.williampfaff.com/modules/news/article.php?storyid=440-Cached

For latest U.S. Defense Budget see www.nationalpriorities.org/print/7227)

Ivo Daalder & Jan Lodal, "The Logic of Zero,"
www.brookings.edu/articles/2008/11_nuclear_weapons_daalder.aspx?emc=1m8m=2193848/=49&v=746750

W.J. Hennigan, "Drone makers keen to sell abroad," *Los Angeles Times*, July 9, 2012

Global Network: www.space4peace.org

PAROS, www.reachingcriticalwill.org/legal/paros/wgroup.html

Chapter 6: Creating Peace

Michael Kavanagh, "Global Recession Makes World Less Safe," *Financial Times*, June 2, 2009,
www.visionofhumanity.org/gpi/news/137/global-recession-makes-world-less-safe/

Economic bonus of peace: Katie Paul, "Gauging Peace: The Economic Indicators Edition," *Newsweek*, June 2, 2009,
www.visionsofhumanity.org/gpi/news/147/gauging-peace-the-economic-indicators-ed...

John Madslien, "The Purchasing Power of Peace," BBC News, June 3, 2009, www.visionofhumanity.org/news/159/the-purchasing-power-of-peace/

"Global Peace Index 2009," www.visionofhumanity.org/gpi/home.php

"Global Peace Index Rankings," www.visionofhumanity.org/gpi/results/rankings.php; "Methodology and Data Sources,"
www.visionofhumanity.org/gpi/about-gpi/methodology.php

David Swanson, *War Is a Lie*, David Swanson, 2010

Scott Brown, "Let Slip the Bots of War," *Wired*, July, 2009

"Bullied boys: Why bright lads are being picked on," *The Independent*, May 14, 2009

Robin Grille, "Natural Born Bullies," Oct. 1999, www.naturalchild.org/robin_grille/natural_born_bullies.html

Robin Grille, *Parenting for a Peaceful World*, Longueville Media, 2005

UN, "States with full abolition [of corporal punishment],"
http://www.endcorporalpunishment.org/pages/progress/prohib_states.html

Julia Ward Howe 1870 declaration: http://womenshistory.about.com/od/howe/writing/a/mothers_day.htm

Jean Shinoda Bolen, M.D., *Urgent Message from Mother: Gather the Women, Save the World*, Conari Press, 2005 Women's peace work: Kim Ridley, "Venus Rising," *Ode*, September, 2005

Ken Beller and Heather Chase, *Great Peacemakers: True Stories from around the World*, LTS Press, 2008

HR 808: www.thepeacealliance.org/content/view/76/68/

"UK Parliament—Early Day Motion," http://edmi.parliament.uk/EDMi/EDMDetails.aspx?EDMID=38372&SESSION=899

Patrick J. Buchanan, "Time to Exit the Empire Game," World Net Daily, July 25, 2008,
www.informationclearinghouse.info/article20358.htm

Jim Wolf, "Nearly 7 in 10 major U.S. arms programs over budget," March 30, 2009,
http://news.yahoo.com/s/nm/20090330/ts_nm/us_arms_usa_audit/print

Jim Wallis, "$296 Billion, 22 Months," Sojo Mail, March 31, 2009

Chalmers Johnson, *Nemesis: The Last Days of the American Republic*, Metropolitan Books, 2007, www.alternet.org/story/47998

Chalmers Johnson, "Evil Empire," www.informationclearinghouse.info/article17708.htm

Linda J. Bilmes and Joseph E. Stiglitz, "The Iraq War Will Cost Us $3 Trillion, and Much More," *Washington Post*, March 9, 2008, www.washingtonpost.com/wp-dyn/content/article/2008/03/07/AR2008030702846_p...

Rupert Cornwell, "The Unholy Trinity of Arms Manufacturers, the Pentagon, and Congress," *The Independent*, February 10, 2008

In November 2009 senior House Democrats introduced legislation to impose a surtax beginning in 2011 to cover costs of the wars in Iraq and Afghanistan. One of the co-sponsors, John P. Murtha, said he knew the bill would not pass but that the senators were trying to send a message about the moral obligation to pay for wars.

Chalmers Johnson, "Three Good Reasons to Liquidate Our Empire and 10 Ways to Do It," August 1, 2009, www.alternet.org/module/printversion/141689

Part Two: Making a Living, Having a Say
Chapter 7: Protect Democracy

"Democracy's Century: A Survey of Global Political Change in the 20th Century," December 7, 1999, www.freedomhouse.org/reports/century.html

www.historylearningsite.co.uk/impact_1867_reform_act.htm

"Women's Suffrage," http://en.wikipedia.org/wiki/Women's_suffrage

 "The Least Free Places on Earth," www.foreignpolicy.com/articles/2009/07/02/the_least_free_places_on_earth?print=y...

Least-free list from bottom up is North Korea, Burma, Equatorial Guinea, Libya, Somalia, Sudan, Turkmenistan, Uzbekistan, Chechnya, Tibet, Belarus, Chad, China, Cuba, Eritrea, Laos, Saudi Arabia, Syria, Zimbabwe, and Western Sahara (Morocco)

"Freedom in the World 2009: Global Data," http://www.freedomhouse.org/uploads/fiw09/FIW09_Tables&GraphsForWeb.pdf

"Corruption Perceptions Index," Transparency International, June 24, 2008, www.transparency.org/news_room/in_focus/2008/cpi2008/cpi_2008_table

Robert B. Reich, *Supercapitalism: The Transformation of Business, Democracy, and Everyday Life*, Knopf, 2007 Marc Ambinder, "The Corporations Already Outspend the Parties," Feb. 1, 2010, http://politics.theatlantic.com/2010/02/the_corporations_already_outspend_the_parties.php

"The Big Money behind State Laws," editorial *New York Times*, Feb. 12, 2012, http://www.nytimes.com/2012/02/13/opinion/the-big-money-behind-state-laws.html

"American Legislative Exchange Council," http://en.wikipedia.org/wiki/American_Legislative_Exchange_Council

"American Legislative Exchange Council," http://www.sourcewatch.org/index.php?title=American_Legislative_Exchange_Council

Ravi Nessman, "Report links '92 attack on mosque to politicians," *Arkansas Democrat Gazette*, Nov. 25, 2009

Editorial, *New York Times*, "How to Trust Electronic Voting," June 22, 2009

Thomas Geoghegan, "Mr. Smith Rewrites the Constitution," *New York Times*, Jan.11, 2010, www.nytimes.com/2010/01/11/opinion/11geoghegan.html?pagewanted=print

Robert Reich, "Social Darwinism Is Here to Stay," Christian Science Monitor, April 4, 2012, http://www.csmonitor.com/Business/Robert-Reich/2012/0404/Social-Darwinism-is-here-to-stay

Tiny minority: not only could 41 senators from the 21 smallest states, representing about 10% of U.S. population, veto any action, but they effectively nullify majority decisions of the House of Representatives.

 Bob Geiger, "Voices from 2002: Senators Who Voted Against War," Nov. 17, 2005, http://bobgeiger.blogspot.com/2005/11/voices-from-2002-senators-who-voted.html

 "I love gridlock": 'Countdown with Keith Olbermann,' Feb. 22, 2010, www.msnbc.msn.com/id/35538934

David Kravets, "Senators Demand DOJ Release Secret Spy Court Rulings," March 15, 2012, Wired*, http://www.wired.com/threatlevel/2012/03/declassify-spy-court-rulings/*

RT TV, "Senators terrified with abuse of Patriot Act's Secret Laws," March 18**,** 2012, http://www.opednews.com/articles/Senators-terrified-with-ab-by-RT-TV-120318-229.html

Joanne Mariner, "A First Look at the Military Commissions Act of 2009, Part One," http://writ.news.findlaw.com/mariner/20091104.html

"The Military Commissions Act—Questions and Answers," http://www.rense.com/general74/mil.htm

ACLU plan: www.aclu.actu.org/transitional

Chris Floyd, "Dred Scott Redux: Obama and the Supremes Stand Up for Slavery," Dec. 18, 2009, http://chirs-floyd.com/component/content/article/1-latest-news/1887-dred-scott-redux-obama-and-the-supremes-stand-up-for-slavery.html

"Sections 1031 and 1032 of National Defense Authorization Act," http://pastebin.com/qN51iztQ

Amanda Simon, ACLU, "President Obama Signs Indefinite Detention into Law," http://www.aclu.org/blog/national-security/president-obama-signs-indefinite-detention-law

Marcy 'emptywheel,' "With Latif Decision, Section 1031 Authorizes Indefinitely Detaining Americans Based on Gossip," http://www.emptywheel.net/2011/11/19/because-of-latif-section-1031-authorizes-indefinitely-detaining-americans-based-on-gossip/

Stephen D. Foster, Jr., "The National Defense Authorization Act Is Even Scarier Than We Thought, Allows Military To Torture American Citizens," http://www.addictinginfo.org/2011/12/02/the-national-defense-authorization-act-is-even-scarier-than-we-thought/

Also, Section 1031 applies to persons who attack a "coalition partner" which might describe another country with which the United States has a military alliance although it is not in itself a democracy.

Mark Green, "How to Fix Our Democracy, *Nation*, March 12, 2007

Rafael López Pintor, Maria Gratschew and Kate Sullivan, "Voter Turnout Rates from a Comparative Perspective," http://www.idea.int/publications/vt/upload/Voter%20turnout.pdf

Female legislators: *Utne Reader*, Nov/Dec 2008

"What Is Proportional Representation?" www.worldpolicy.org/projects/globalrights/democracy/abcs.html

Voting Systems," www.democracy-building.info/voting-systems.html

Douglas J. Amy, "What Is Proportional Representation and Why Do We Need This Reform?" www.mtholyoke.edu/acad/polit/damy/BeginningReading/whatispr.htm

Douglas J. Amy, "Instant Runoff Voting: No Substitute for Proportional Representation*,"* https://www.mtholyoke.edu/acad/polit/damy/articles/irv.htm

"Concord Principles," http://en.wikipedia.org/w/index.php?title=Concord_Principles&prinable=yes

Other Concord recommendations are: stronger protections from big government and big corporations; more public control over civic assets such as public lands, airwaves, and pension funds; improved school curriculum in civic participation; expanded public access television; protection for whistleblowers

http://www.definition-of.net/disaster+capitalism

Joseph E. Stiglitz, "Bleakonomics," New York Times, Sept. 30, 2007, http://www.nytimes.com/2007/09/30/books/review/Stiglitz-t.html

Paul Craig Roberts, "Is Western Democracy Real or a Façade?" February 14, 2012, http://informationclearinghouse.info/article30525.htm

Chris Savage, "The Scandal of Michigan's Emergency Managers," *The Nation*, March 5/12, 2012, http://www.thenation.com/article/166297/scandal-michigans-emergency-managers

"Trans-Pacific Strategic Economic Partnership," http://en.wikipedia.org/w/index.php?title=Trans-Pacific_Stategic_Economic_Partnership&

Lori Wallach, "NAFTA on Steroids," *The Nation*, June 27, 2012, http://www.thenation.com/print/article/168627/nafta-steroids

Mark Vorpahl, "The Trans-Pacific Partnership: A Global Coalition of Big Business Actors," http://www.globalresearch.ca/PrintArticle.php?articleId=31768

David Dayen, "Trans-Pacific Partnershiip Documents Show Trade Treaty Could Grow Much Larger than NAFTA," June 15, 2012, http://news.firedoglake.com/2012/06/15/trans-pacific-partnership-documents-show-trade-tre

"What is TPPA?" http://tppwatch.org/what-is-tppa/

Augustus B. Cochran, *Democracy Heading South: National Politics in the Shadow of Dixie*, University Press of Kansas, 2002, http://www.kansaspress.ku.edu/cocdem.html

Sari Geber, "Ellsberg: Obama Fears Military Revolt," Nov. 2, 2009, www.truthout.org/1102096?print

William Pfaf, "America Owned by Its Army," Nov. 8, 2009, www.williampfaff.com/modules/news/article.php?storyid=440-Cached

Rwanda disc jockeys: "Bill Moyers Journal," PBS, July 24, 2009

Jeremy Scahill, Rebel Reports, "Neocon US Colonel Calls for Military Attacks on 'Partisan Media," May 25, 2009, www.alternet.org/story/140223

Thomas Merton, *Faith and Violence*, in Krieger and Kelly, *Waging Peace II*

Aldous Huxley, "The Ultimate Revolution," lecture March 20, 1962, http://www.informationclearinghouse.info/article24712.htm

Sharon Weinberger, "No Place to Hide," *Discover*, August, 2008

Rob Waugh, "Turning the tables on Big Brother: Now Internet users can watch who is spying on them in blow against Google's new snooping policy," *Daily Mail* UK, March 2, 2012, http://www.dailymail.co.uk/sciencetech/article-2109223/Google-privacy-policy-Mozilla-add-Collusion-reveals-spying-internet-users.html

Spencer Ackerman, "Angry Birds, Meet Jailbirds: New App Helps You Snitch on Your Friends,"Wired, March 2, 2012, http://www.wired.com/dangerroom/2012/03/app-homeland-security/

Madison Ruppert, "New smartphone app ushers in the digital age of citizen spying," March 5, 2012, http://endthelie.com/2012/03/02/new-smartphone-app-ushers-in-the-digital-age-of-citizen-spying/

"Face-mapping app for smartphone searching," Homeland Security Newswire, August 17, 2011*,* http://www.homelandsecuritynewswire.com/face-mapping-app-smartphone-searching

High-tech stalking: *Futurist*, May/June 2009

Louis Sirico, "New RFID Technology Allows You to be Tracked WITHOUT Your Knowledge," www.infowars.com/new-rfid-technology-allows-you-to-be-tracked-without-your-knowledge/

"Councils told to stop abusing secret cameras," *Independent*, April 17, 2009, www.independent.co.uk/news/uk/politics/councils-told-to-stop-abusing-secret-camer

Sam Enriquez, "Mexico to boost phone/email taps with U.S. aid," *Los Angeles Times*, May 26, 2007, www.latimes.com/news/nationworld/world/la-fg-mexico25may25,0,7011563.story?coll=la-home-center

Daniel Tencer, "The TSA Is Funding Airport Mind-Reading," Jan. 9, 2010, www.alternet.org/module/printversion/145041

Craig Whitlock, "U.S. spying network spreads over Africa," The Washington Post, June 15, 2012
Jeremy Scahill, "U.S. Cities Increasing Use of Armed Mercenaries to Replace Police," April 25, 2009
Jeremy Scahill, "Obama Has 250,000 'Contractors' Deployed in Iraq and Afghanistan and Is Increasing the Use of Mercenaries,"
June 4, 2009, www.alternet.org/bloggers/http://rebelreports.com/140378/

Chapter 8: Expand Democracy

Initiative and Referendum Institute, http://www.iandrinstitute.org/statewide_i&r.htm
Swiss government & Google: Bradley S. Klapper, AP Aug. 25, 2009
"Direct democracy," http://en.wikipedia.org/w/index.php?title=Direct_democracy&printable=yes
Vladimir Putin, "An honest democracy," *Washington Post*, Feb. 10, 2012
"Deliberative democracy," http://en.wikipedia.org/w/index.php?title=Deliberative_democracy&printable=yes
"Concordance system," http://en.wikipedia.org/w/index.php?title=Concordance_system&printable=yes
Andrea Cornwall, "Deliberation—Lessons from Brazil," Feb. 10.2010, www.opendemocracy.net/print/50246
"Iron law of oligarchy," http://en.wikipedia.org/w/index.php?title=Iron_law_of_oligarchy&printable=yes
"Landless Workers' Movement," http://en.wikipedia.org/w/index.php?title=Landless_Workers%27_Movement&printable=y...
 "Abahlali base Mjondolo," http://en.wikipedia.org/w/index.php?title=Abahlali_baseMjondolo&printable=yes
 People Power II: Grace Lee Boggs, "On Common Ground," *YES! Magazine*, Fall 2001,
www.futurenet.org/other/pop_print_article.asp?ID=449
Argentina, Project Censored 2002-2003, in *Nexus New Times*, January-February 2004
Pepper D. Culpepper and Archon Fung, "Listen to the Citizens," *Harvard International Review*,
http://hir.harvard.edu/articles/print.php?article=1451
"A parliament without politicians," Citizens Centre for Freedom and Democracy, www.ccfd.ca/
"The People's Parliament: Why it must be on-line," http://ccfd.ca/index.php?option=com_content&task=view&id=407
Skip Descant, "Group Plowing Forward: Mayor [says] five of 18 projects complete in first six months," *Northwest Arkansas Times*, November 16, 2009
"What is participatory budgeting?" www.participatorybudgeting.org.uk/Brief.htm
Rebecca Abers, "Daring democracy—Porto Alegre, Brazil, *New Internationalist magazine*, December 2002,
www.thirdworldtraveler.com/South_America/Democracy_PortoAlegre.html
America Vera-Zavala, "Paticipatory Democracy in Porto Alegre, Brazil," *Sentient Times*, Feb/Mar 2003,
www.sentienttimes.com/03/feb_mar_03/brazilT.htm
"Participatory budgeting," http://en.wikipedia.org/w/index.php?title=Participatory_budgeting&printable=yes Gianpaolo
Baiocchi, "Participation, Activism, and Politics," Department of Sociology, University of Wisconsin, November 1999
"Consensus democracy," http://en.wikipedia.org/w/index.php?title=Consensus_democracy&printable=yes Switzerland: Dietrich
Fischer, *Progressive Review*, 1991, http://prorev.com/devolution.htm
David Roberts, "The real reason the climate bill is going to suck," Nov. 2, 2009, www.grist.org/article/2009-11-02-the-real-reason-the-climate-bill-is-going-to-suck/
Michael Zimmerman, interview with Alan Atkisson, "Introduction to Deep Ecology," *In Context*, Summer 1989,
www.context.org/ICLIB/IC22/Zimmerman.htm)
The new, more regionally coherent California states would be San Diego/Orange County/Inland Empire; Greater Los Angeles; San Francisco/Sacramento/Santa Cruz/Silicon Valley; and Northern/Central valley
 Martin Hutchinson, "California breakup?" May 21, 2009, www.breakingviews.com/2009/05/21/California%20break-up.aspx?p=1
Paul Krugman, "State of Paralysis," *New York Times*, May 25, 2009,
www.nytimes.com/2009/05/25/opinion/25krugman.html?_r=2&pagewanted=print; Kevin O'Leary, "California's Fiscal Crisis:
The Legacy of Proposition 13," *Time*, http://news.yahoo.com/s/time/08599190493800/print
"Devolution of power is crucial," Interview with Professor LS. Gulati, Kerala State Planning Board, *Frontline*, Nov. 25-Dec. 08,
2000, www.hindi.com/fline/fl1724/17240970.htm
Some of the Indian States are very large; for instance, Kerala at 29 million is larger than many countries.
 Dr. Jehan Perera, "The debate over the devolution of power," June 29, 2009, www.peace-srilanka.org/~peace/index.php?view=article&catid=1%3Alatest&id=41...
"Supranationalism and Devolution," http://berkeley.peralta.edu/Projects/10404/PowerPoint/European_Union.ppt
 "Latin American governments decentralize forest management," Bioversity International, July 23, 2008,
www.bioversityinternational.org
Daniel Patrick Moynihan, "The Devolution Revolution," *New York Times*, Aug. 6, 1995,
www.nytimes.com/1995/08/06/opinion/the-devolution-revolution.html?pagewanted=p...
Anthony Downs, "The Devolution Revolution: Why Congress Is Shifting a Lot of Power to the Wrong Levels," Brookings Policy
Brief, www.brookings.edu/papers/1996/07governance_downs.aspx?p=1
John Watt, "Devolution of Power: The Ideological Meaning," *Journal of Educational Administration*, 1989,
www.emeraldinsight.com
Christopher Ketcham, "Why Secessionists Don't Like the United States," *Los Angeles Times*, Sept. 14, 2008
Kelley Shannon, "Democrats: Texas gov should disavow secession talk," AP, April 16, 2009

Colin Woodard, *American Nations: A History of the Eleven Rival Regional Cultures of North America*, Viking, 2011
The eleven nations are Yankeedom, Tidewater, New Netherland, New France, The Midlands, Greater Appalachia, Deep South, The Far West, The Left Coast, El Norte, and First Nation
Chuck Thompson, *Better Off Without 'Em: A Northern Manifesto for Southern Secession*, Simon & Schuster, 2012
"Descendants of Sitting Bull, Crazy Horse break away from U.S.," AFP, Dec. 20, 2007
Faith Bremner, "Lakota group pushes for new nation," *Argus Leader Washington Bureau*, December 20, 2007 "Secession," http://en.wikipedia.org/w/index.php?title=Secession&printable=yes
"Urban secession," www.knowledgerush.com/kr/encyclopedia/Urban_secession/
"Green politics," http://en.wikipedia.org/w/index.php?title=Green_politics&printable=yes
"Green Party," http://en.wikipedia.org/w/index.php?title=Green_party&printable=yes; www.globalgreens.info
www.globalgreens.org/globalcharter
Former British colonies New Zealand, Australia, and South Africa have proportional representation.
George Monbiot, "No More Ventriloquists," *Guardian*, April 24, 2007, www.monbiot.com/archives/207/04/24/no-more-ventriloquists/
 Chris McGreal, "Mandela's Elders to tackle global crises," *The Guardian*, July 19, 2007, www.guardian.co.uk/world/2007/jul/19/southafrica.nelsonmandela
"What Is the Elders?" http://www.theelders.org/about

Chapter 9: Can We Reform Capitalism?

Alexander Arapoglou and Jerri-LynScofield, "Uncle Sa Needs YOU for a Bailout: 6 Reasons Another Big Banking Crisis Is Coming Our Way," Alternet, August 17, 2012, http://www.alternet.org/print/economy/uncle-sam-needs-you-bailout-6-reasons-another-big...
IMF predicts debt more than GDP: Andrew Palmer interview, *Economist*, May 14, 2009, www.economist.com/printedition/PrinterFriendly.cfm?story_id=13604663
Alistair McConnachie, review of David Boyle, *The Money Changers*, in *Prosperity*, Jan., 2003, www.prosperityuk.com/prosperity/revus/mchange.html
Bernard Lietaer, *The Future of Money: Creating New Wealth, Work, and a Wiser World*, Random, 2001
Frontline, "The Warning," reported by Jim Gilmore, Oct. 20, 2009
Robert Scheer, "Crime of the Century," July 6, 2012, http://readersupportednews.org/off-site-opinion-section/83-83/12282-focus-crime-of-the-ce
$743: Ellen Hodgson Brown, "Shifting the Burden from Main Street to Wall Street: Why We Need a Tobin Tax," Nov. 7, 2009, www.truthout.org/110709C
Robert B. Reich, *Supercapitalism: The Transformation of Business, Democracy, and Everyday Life*, Knopf 2007
Nicolas Sarkozy's full comment as reported by Reuters, lest we quote him out of context: **"The world has paid with tens of millions of unemployed, who were in no way to blame and who paid for everything. It caused a lot of anger. Too much is too much. The world was stupefied to see one of five biggest U.S. banks collapse like a house of cards. We saw that for the last 10 years, major institutions in which we thought we could trust had done things which had nothing to do with simple common sense. That's what happened... There is an ocean between flexibility and the scandal we saw. So if people present me as obsessed with regulation, it's because there is a need for regulation. I don't contest the principle of securitisation, but when one offshore country guaranteed 700 times its GDP, *are we in the market economy or in a madhouse?* Bonuses don't bother me, provided there are also ...draw-downs when there are losses. When things don't work, you can never find anyone responsible. Those who got bumper bonuses for seven years should have made losses in 2008 when things collapsed."** http://www.zerohedge.com/article/sar...world-madhouse
Use community banks: Stephen Pizzo, "Pissed Off at the Corporate Banking Industry? Here's an Easy Way You Can Hurt Them," April 4, 2009, www.alternet.org/module/printversion/134392
Ann Gibbons (cartoonist), "Six Chix," August 27, 2009
Greenspan remark: October 23, 2008
Amy Domini, "What the World Needs Now," *Ode*, April 2009
Alex Daniels, "Tighter Market Controls Urged," *Arkansas Democrat-Gazette*, November 19, 2009
"Financialization," http://en.wikipedia.org/wiki/Financialization
Ethan Miller, "Independence from the Corporate Global Economy," *Yes! Magazine*,Winter 2007, www.yesmagazine.org/other/pop_print_article.asp?ID=1545
Amy Goodman interviews Robert Johnson, "Move Your Money: Project Urges People to Stop Banking with Wall Street," Democracy Now! January 16, 2010, www.alternet.org/module/printversion/145163
Third world debt: John Ralston Saul noted in "The Collapse of Globalism" that "For two decades an elite consensus insisted that unsustainable third-world debts could not be put aside in a sort of bad debt reserve without betraying…an unwavering respect for the sanctity of international contracts. It took the same people about two weeks to abandon sanctity and propose bad debt banks for their own far larger debts in 2009," qtd. Chris Hedges, www.alternet.org/module/printversion/142788
"Odious Debt." http://en.wikipedia.org/wiki/Odious_debt
Gross Domestic Product by Selected Industry and State: 2009, http://www.census.gov/compendia/statab/2012/tables/12s0672.pdf
Billionaires: *Forbes*, March 24, 2008
Joseph E. Stiglitz, "Too Big to Fail or Too Big to Save?" Hearing of Joint Economic Committee, chair Congresswoman Carolyn B. Maloney, April 21, 2009

Joshua Holland & Nomi Prins, "Former Wall Street Player Reveals the Inside World behind Shady Bailouts to Bankers," Oct. 31, 2009, www.alternet.org/module/printversion/143573

James Moore, Deputy Business Editor, "Government to Break up the Banks," *The Independent*, October 28, 2008; Jim Puzzanghera, "Push on to stunt growth of banks," *Los Angeles Times*, Nov. 29, 2009

http://www.foxnews.com/us/2012/01/17/big-banks-must-show-break-up-plans-under-new-rule/#ixzz1k1Vsk8nY

"Vatican Calls for 'Central World Bank' to Be Set Up," Reuters Oct. 24, 2011, http://www.cnbc.com/id/45013499/Vatican_Calls_for_Central_World_Bank_to_Be_Set_Up

"Sanders Releases Explosive Bailout List, " http://readersupportednews.org/news-section2/318-66/11895-sanders-releases-explosive-b

Dean Baker, "Democratizing the Federal Reserve," July 8, 2009, http://ourfinancialsecurity.org/2009/07/democratizing-the-federal-reserve/

see Michael D. Greaney, "Democratize the Fed," March 10, 2009, http://just3rdway.blogspot.com/2009/03/democratize-fed.html

Maddy Sauer and Richard Esposito, "Over 100 Investment Firms and Agents Subpoenaed in Widening Pension Fund Probe," ABC News, May 1, 2009, http://abcnews.go.com/print?id=7481344

2009 Ponzi schemes: Curt Anderson, AP, January 3, 2010

Patrick Temple-West, "Democrats revive financial transaction tax idea," Reuters, Nov. 2, 2011, http://www.reuters.com/article/2011/11/02/us-usa-tax-transaction-idUSTRE7A175U20111102

"Robin Hood tax," http://em.wikipedia.org/w/index.php?title=Robin_Hood_tax Sarkozy: MarketWatch, January 16, 2012

Ellen Brown, "Greece and the Euro: Fifty Ways to Leave Your Lover," June 6, 2012, http://truth-out.org/news/item/9611-greece-and-the-euro-50-ways-to-leave-your-lover

Complementary Currency: Bernard Liataer, "The Swiss Solution," *Ode*, April, 2009

Paul Krugman, "The Austerity Agenda," *New York Times*, June 1, 2012, http://readersupportednews.org/off-site-opinion-section/83-83/11712-the-austerity-agenda

NPR Staff, "Voters, Economists Agree: Austerity Not the Answer," http://www.npr.org/2012/05/13/152627865/eus-financial-crisis-doesnt-end-at-nations-borders

Platform of Greece's Syriza Left Coalition: Jadaliyya Reports, May 31, 2012, http://www.jadaliyya.com/pages/index/5772/the-exit-from-the-crisis-is-left_main-points-of-gr

David B. Grusky, "America's Army of Jobless," *Los Angeles Times*, December 4, 2011

Business Insider, www.businessinsider.com/real-employment-rate-47-percent-2011-1

Lester C. Thurow, *The Zero-Sum Society*, Basic Books 1980

Laura Fitzpatrick, "Why Do Women Still Earn Less Than Men?" April 20, 2010, http://www.time.com/time/nation/article/0,8599,1983185,00.html#ixzz1vi64quy4

"Gender Pay Gap," http://en.wikipedia.org/wiki/Gender_pay_gap

Income disparities: Hope Yen, AP, April 28, 2009

David Sirota, "How the Ultra-Rich Are Trying to Kill Health Reform," Creators Syndicate, July 25, 2009, www.alternet.org/module/printversion/141520

Sean O'Grady, Economics Editor, "Warning: Britain faces new recession," *The Independent*, June 30, 2009

Andrew Simms, "From the ashes of the crash: 20 first steps from new economics to rebuild a better economy," nef, October 2008

"Union Membership Increases in Australia," *Sunday Morning Herald*, April 17, 2009

Jelle Visser, "Union membership statistics in 24 countries," *Monthly Labor Review*, Jan. 2006, www.bls.gov/opub/mir/2006/01/art3full.pdf

"The Labor Union Movement in America," www.socialstudieshelp.comEco_Unionization.htm

Kevin Drum, "Plutocracy Now," *Mother Jones*, March/April 2011

Kevin Drum, "How to Defund the Left," *Mother Jones*, May/June 2011

James Surowiecki, "State of the Unions," *The New Yorker*, January 17, 2011

Augustus B. Cochran III, *Democracy Heading South*, University Press of Kansas, 2001

Union membership: bottom 10 are NC, GA, SC, VA, TX, LA, SD, MS, UT, and AR; top 10 are NY, HI, AK, WA, MI, NJ, CA, CN, NV, IL, *AARP Bulletin*, Sept. 2009 from Bureau of Labor Statistics**; Also, low union membership MS and AR are among the five lowest-earning states, while high union membership NJ, CN, AK, and HI are among the five top-earning states**.

William J. Swatos, Jr., ed., "Protestant Ethic Thesis," Encyclopedia of Religion and Society, http://hirr.hartsem.edu/ency/protestantism.htm

Calvinism and Capitalism: In his classic work, *The Protestant Ethic and the Spirit of Capitalism***, German sociologist Max Weber argued that Protestantism (especially Calvinism) was part of the casual chain that led to the development of world-system dominance by Anglo-American capitalism.**;

"Protestant Work Ethic," http://en.wikipedia.org/wiki/Protestant_work_ethic;

R.H. Tawney, *Religion and the Rise of Capitalism*, 1926

Les Christie, "Median Incomes," Sept. 22, 2009, www.CNN.Money.com

An outline for teachers of U.S. history to teach labor history, sponsored by Illinois Labor History Society, is at www.kentlaw.edu/curricul.htm

Holmes qtd. Chris Hedges, "With Global Capitalism Exposed as a Sham, All the Global Elite Have Left Is Pure Force," Sept. 22, 2009, www.alternet.org/module/printversion/142788

Nanette Fondas, "The Power of Onesies," *Tikkun*, reprinted *Utne Reader*, Nov/Dec 2008

Jill Esbenshade and Doreen Mattingly, "The Union Advantage," *San Diego Union-Tribune*, Dec. 2, 2008, www.onlinecpi.org/article.php?list=type&type=342

45% of union members are women: Steven Greenhouse, *New York Times*, Nov. 15, 2009

Yasser Abdih, "Closing the Jobs Gap," IMF, *Finance & Development*, June 2011, Vol. 48, No. 2, http://www.imf.org/external/pubs/ft/fandd/2011/06/abdih.htm

Felix Salmon, "The global youth unemployment crisis," Dec. 22, 2011, http://blogs.reuters.com/felix-salmon/2011/12/22/the-global-youth-unemployment-crisis/

"Youth unemployment at highest recorded level - ILO report; 36 million Asia Pacific young people unemployed – A possible 'Lost generation'," ILO News, August 12, 2010, http://www.ilo.org/asia/info/public/pr/WCMS_143339/lang--en/index.htm

David Coy, "The Youth Unemployment Bomb." http://www.businessweek.com/magazine/content/11_07/b4215058743638.htm

Mike Konczal, "U.S. Youth Unemployment at Arab Spring Levels," http://rortybomb.wordpress.com/2011/11/14/youth-unemployment-in-united-states-in-line-with-arab-spring-countries/

"Youth Unemployment," http://www.africaneconomicoutlook.org/en/in-depth/developing-technical-and-vocational-skills-in-africa-2008/tvsd-in-specific-contexts/youth-unemployment/

U.S. new jobs from start-ups: Christopher Helman, "The World's Happiest Countries," *Forbes*, January 19, 2011, http://www.forbes.com/2011/01/19/norway-denmark-finland-business-washington-world-happiest-countries.html

New international trade union: www.yesmagazine.org/other/pop_print_article.asp?ID=1844

Robert Fisk, "Secret Plan to Ditch the U.S. Dollar's Dominance Uncovered," *Independent* UK, Oct. 6, 2009, www.alternet.org/modiule/printversion/143119

"Basel Accords," http://en.wikipedia.org/w/index.php?title=Basel_Accords

Jim Brunsden, "U.S., EU rebuked on rules for banks," Bloomberg News, June 12, 2012

"Banks: where the money isn't," Sept. 12, 2008, http://goldnews.bullionvault.com/banks_fractional_reserve_banking_capital_091220082

Half work off the books: Robert Neuwirth, "Glboal Bazaar," *Scientific American*, September, 2011

Replace Bretton Woods: Justin Fox, "The Curious Capitalist," *Time*, February 16, 2009

Justin Fox, "The World Bank's Real Problem," *Time*, May 3, 2007, www.time.com/time/printout/0,8816,1617526,00.html

IMF to monitor global economy: Anthony Fajola, *The Washington Post*, April 27, 2009

Neil Watkins, "No Blank Check for the IMF," God's Politics Blog, May 14, 2009, http://blog.sojo.net/2009/05/14/no-blank-check-for-the-imf/?continue

Herman Daly, "Back Away from the Tipping Point," *Adbusters*, Jan/Feb, 2009

"Green economics," www.knowledgerush.com/kr/encyclopedia/Green_economics/

"Ecological Economics," http://en.wikipedia.org/w/index.php?title=Ecological_economics&printable=yes

Those who first developed the ideas of ecological economics were economists Nicholas Georgescu-Roegen, Kenneth Boulding, and Herman Daly, ecologists Robert Costanza, C.S. Holling, and Howard Odum, and physicist R.U. Ayres.

Todd Boyle, "Full-Cost Accounting: The Best Way to Fix the Global System," *Adbusters*, Jan/Feb 2005

Heather Rogers, "The greening of capitalism?" *International Socialist Review*, March/April 2010, http://www.isreview.org/issues/70/feat-greencapitalism.shtml

Elizabeth Barron, "Beyond Green Capitalism: Providing an alternative discourse for the environmental movement and natural resource management," *Middle States Geographer*, 2005, 38:69-76, http://geographyplanning.buffalostate.edu/MSG2005/10%20Barron.pdf

"What Is a Steady State Economy?" Center for the Advancement of the Steady State Economy, http://steadystate.org/wp-content/uploads/2009/12/CASSE_Brief_SSE.pdf

Brian Czech, "Steady-state economy," The Encyclopedia of Earth, www.eoearth.org/articles/Steady_state_economy

Herman Daly definition of a steady state economy: "An economy with constant stocks of people and artifacts, maintained at some desired, sufficient levels by low rates of maintenance throughput, that is, by the lowest feasible flows of matter and energy from the first stage of production to the last stage of consumption."

"De-growth," http://en.wikipedia.org/w/index.php?title=De-growth&printable=yes

Social enterprise definition: Kevin Lynch and Julius Walls, Jr., *The Practitioner's Guide to Social Enterprise*, qtd. *Ode*, March 2009

Dan Box, "The Good Market," *Ecologist*, March 2009

Alisa Gravitz, "Six Ways to Stabilize Our Economy," *Northwest Arkansas Times*, January 25, 2009

Doug Rushkoff, *Life Inc.: How the World Became a Corporation and How to Take It Back*, review by Jon Lebkowsky, Sept. 4, 2009, www.worldchanging.com/archives/010430.html

Humanize corporation consultants: Barrett Values Centre, Momentum Consulting, etc.

"Fair trade," http://en.wikipedia.org/w/index.php?title=Fair_trade&printable=yes

Fair World Project, Spring 2011, www.fair-worldproject.org

Kai Huschke, "Chocolate: the Bitter and the Sweet," *Fair World Project*, Spring 2011

Phyllis Robinson, "To Tell the Truth: Who Owns Fair Trade?" *Fair World Project*, Spring 2011

"Ethical consumerism," http://en.wikipedia.org/w/index.php?title=Ethical_consumerism&printable=yes

David Korten, *When Corporations Rule the World*, Kumarian, 2001) (See Thom Hartmann, *Unequal Protection: The Rise of Corporate Dominance and the Theft of Human Rights*, Rodale, 2002

Hartmann says SCOTUS decisions Buckley v. Valeo and First National Bank v. Bellotti established corporate rights to free speech and political activity.
By grabbing the citizen's right against unwarranted search and seizure, corporations force OSHA safety inspectors or USDA meat inspectors to give advance notice of a week or more. Of course, such inspections will not detect any problems.
Fran Korten, publisher *Yes! Magazine*, "10 Ways to Stop Corporate Dominance of Politics," *Yes!* Jan. 25, 2010, http://www.yesmagazine.org/people-power/10-ways-to-stop-corporate-dominance-of-politics.
Other proposals listed by Korten include passing the Fair Elections Now Act to provide public financing for Congressional candidates, giving qualified candidates equal amounts of free broadcast air time for political messages, and banning political advertising by corporations that receive government money, hire lobbyists, or collect most of their revenue abroad. Schumer-Van Hollen would require groups running ads for or against a candidate to report donors to the FEC and list the main donors in the ad itself. Rep. Alan Grayson of Florida suggested a 500% excise tax on corporate contributions to political committees and advocacy campaigns, prohibiting companies from trading their stock on national exchanges if they make such political contributions, and/or requiring publicly traded companies to disclose in their SEC filings the amounts used to influence public opinion.
"Two Democrats' remedy for the high court's campaign finance ruling," Feb. 16, 2010, www.washingtonpost.com/wp-dyn/content/article/2010/02/15/AR2010021502993_p...
Amendment 28: www.movetoamend.org; www.citizen.org/ ; www.voteraction.org
Corporation powers: The 1919 Michigan Supreme Court decision Dodge v. Ford Motor Company set a precedent.
Citizens United: David G. Savage, "Supreme Court OKs Unlimited Corporate Spending on Elections, *LA Times*, Jan. 22, 2010, www.informationclearinghouse.info/article24471.htm
Scott Klinger, "The Bush-Packed Supreme Court Thinks Corporations Are People Too," Jan. 23, 2010, www.alternet.org/module/printversion/145323
"Left and right united in opposition to controversial SCOTUS decision," Feb. 17, 2010, http://news.yahoo.com/s/ynews/ynews_ts1137
Largest criminal fines: In 2009 another pharmaceutical corporation, a subsidiary of Pfizer, Inc., was fined $1.195 billion for misbranding a drug.
Russell Mokhiber and Robert Weissman, "Taming the Corporate Criminal in 11 Easy Steps," Sept. 21, 1999, www.motherjones.com/cgi-bin/print_article.pl?url=http:www.motherjones.com/n...
Douglas A. Hicks, "Taming the Beast," www.religion-online.org/showarticle.asp?title=2976
"How to Overthrow Corporate Rule in 5 Not-so-easy Steps," www.corporations.org/solutions
Allen D. Kanner, "When Nature's Rights Are Fully Recognized, Capitalism Will No Longer Be Viable," *Adbusters*, Sept/Oct 2011
Doug Pibel, "Communities Take Power," *Yes! Magazine*, July 29, 2007, http://www.yesmagazine.org/issues/stand-up-to-corporate-power/communities-take-power
"No Trespassing," *Ecologist*, April 2008
John Gray, OMNI Forum, Feb. 15, 2010
Bibhuddata Pradhan and Andrew Macaskill, "India Markets Strike Over Policy," December 2, 2011
Robert B. Reich, *Supercapitalism: The Transformation of Business, Democracy, and Everyday Life*, Knopf, 2007
Theresa Brennan, Globalization and Its Terrors, Routledge, 2003
Globalization: William I. Robinson, *Adbusters*, May/June 2011
Mike Carr, *Bioregionalism and Civil Society*, University of British Columbia Press, 2005
Goleman, *Ecological Intelligence*

Chapter 10: A Different Kind of Economics

Populists: Tim McNeese, *The Progressive Movement*, Chelsea House, 2008
U.S. homegrown socialism: A century ago, local socialist parties based in industrial cities especially in the Midwest and rooted in ethnic communities, mainly German and Finnish, had by 1912 elected over 1,000 local officials in 33 states and 160 cities. Eugene V. Debs ran for president in 1900, 1904, 1908, and 1912, mainly to encourage these local efforts. The Socialist Party had five English-language and eight foreign-language daily newspapers and almost 300 weekly papers. "Labor History of the United States," http://en.wikipedia.org/w/index.php?title=Labor_history_of_the_United_States&printable...)
Gabriel McClosky-Ross, statement on Rasmussen poll result, "One in five Americans finds socialism superior, poll says," April 11, 2009, http://wikinews.org/w/index.php?title=One_in_fiv_Americans_finds_socialism_superi...
NCB CO-OP 100[R]; "History of the cooperative movement," http://en.wikipedia.org/w/index.php?title=History_of_the_cooperative_movement&printab...
"Rochdale Principles," http://en.wikipedia.org/w/index.php?title=Rochdale_Principles&printable=yes
"Danish cooperative movement," http://en.wikipedia.org/w/index.php?title=Danish_cooperative_movement&printable=yes
Euro Coop—European Community of Consumer Co-operatives, www.eurocoop.org
The National Consumer Cooperative Bank Act created NCB in 1978 due to lobbying by a dedicated advocate for coops, Stan Dryer
"Seikatsu Club Consumers' Cooperative Union, Japan," www.iisd.org/50comm/commdb/desc/d08.htm
Government of India Press Bureau, "Evolution of Cooperatives in India," http://pib.nic.in/feature/fe0299/fl202992.html
Sanjay Kumar Verma, National Cooperative Union of India, New Sector, April/May 2004, www.caledonia.org.uk/verma.htm
Riccardo Lotti et al, "A Cooperative Solution," www.strategy-business.com/press/16635507/06209?tid=230&pg=all
Wilda M. Vanek, "Italian Social Cooperatives," GEO Newsletter, 2001

Sarah van Gelder, "Italy's co-ops form a different sort of economy," *Yes! Magazine*, Sept. 16, 2008, www.yesmagazine.org/...Italys-co-ops-form-different-sort-of.html

Bruno Roelants, "Social cooperatives in Europe: a main actor in social services and social inclusion"

CECOP stands for European Confederation of Worker Cooperatives, Social Cooperatives and Social & Participative Enterprises

Icarus Project: Lily Naha, letter to *Utne Reader*, Nov/Dec 2008

Linda Breen Pierce, "The Simplicity Resource Guide," www.gallagherpress.com/pierce/index.htm

"The Simple Living Network," www.SimpleLiving.net

Elizabeth Pope, "Living Cheap and Loving It," AARP Bulletin, April, 2009

"Simple Living," http://en.wikipedia.org/w/index.php?title=Simple_living&printable=yes

School of Living: www.schoolofliving.org/history.htm

Ethan Miller, "Independence from the Corporate Global Economy," *Yes! Magazine*, Winter 2007

Los Angeles Eco-Village: www.laecovillage.org/brochure.html

Institute for Local Self-Reliance: www.ilsr.or/20yrhist.html

Kevin Danaher, Shannon Biggs, and Jason Mark, "How to Build a Local Energy Economy," October 30, 2007, www.alternet.org/module/printversion/66515

Jurrjaan Kamp, "Money should work for us, not the other way around," *Ode*, Sept. 2005; Bernard Lietaer, *The Future of Money*, Random House UK, 2001

"Let'sLink UK," www.letslinkuk.net/home/theory.htm; www.transaction.net/money/

"Local Exchange Trading Systems," http://en.wikipedia.org/w/index.php?title=Local_Exchange_Trading_Systems; www.unilets.org

"Time-based currency," http://en.wikipedia.org/wiki/Time-based_currency

Andy Steiner, "It's About Time," *Utne Reader*, April/May 2001

G. Seyfang, "Tackling Social Exclusion with Community Currencies: Learning from LETS to time banks," *International Journal of Community Currency Research*, 2002, www.uea.ac.uk/env/cserge/pub/ex/163.htm

David Boyle, "Time Banks: a radical manifesto for the UK," www.david-boyle.co.uk/funnymoney/timebankmanifesto.html

Nicholas Klassen, "Complementary Currencies," *Adbusters*, Jan/Feb 2005

www.timedollar.org; www.accessfoundation.org

Paul Glover, talk and discussion, Fayetteville, Arkansas, May 9, 2009

Thomas H. Greco, Jr., *New Money for Healthy Communities*, 1994 and *Money: Understanding and Creating Alternatives to Legal Tender,* Chelsea Green, 2001

Cathy Tuttle, "Local Currencies: An Overview," July 22, 2009, www.worldchanging.com/archives/010165.html

Gregory A. Krohn & Alan M. Snyder, "An Economic Analysis of Contemporary Local Currencies in the United States," *International Journal of Community Currency Research*, 2008

Paul Glover, "Other HOUR Cities," July 2001, www.lightlink.com/hours/ithacahours/otherhours.html

Shelley Buonaiuto, "Local Currency," *Fayetteville Free Weekly*, April 23, 2009

"Local currency," http://en.wikipedia.org/w/index.php?title=Local_currency&printable=yes

Ellen Brown, "The Public Option in Banking: How We Can Beat Wall Street at Its Own Game," Aug. 5, 2009, www.webofdebt.com/articles/public_option.php

"Reviving the Local Economy with Publicly-Owned Banks," Oct. 14, 2009, www.webofdebt.com/articles/publicly-owned.php

Forrest Jones, "Calls for State-Owned Banks on the Rise," Dec. 29, 2011, http://www.moneynews.com/FinanceNews/State-Owned-Banks-fed/2011/12/29/id/422449

Ellen Brown, "Cooperative Banking in the Aquarian Age," http://www.nationofchange.org/print/16541

"Global Allliance for Banking on Values," http://www.gabv.org/

CDFI Coalition, http://www.cdfi.org/

"On the Subject of Credit Union Failures," www.economicdiscourse.com/articles/1154

www.cuna.org/press/basicinfo.html

"Cooperative Banking," http://en.wikipedia.org/w/index.php?title=Cooperative_banking&printable=yes

"The European Association of Cooperative Banks," www.eurocoopbanks.coop/default.aspx; www.strategy-business.com/press/16635507/06209?tid=230&pg=all

"List of cooperative banks in India," http://en.wikipedia.org/w/index.php?title=List_of_co-operative_banks_in_India&printable=...

Dilwash Baluch, "Explaining the Islamic Banking system," www.helium.com/items/929482-explaining-the-islamic-banking-system

"Islamic economical jurisprudence," http://en.wikipedia.org/w/index.php?title=Islamic_economical_jurisprudence&printable=yes

"*Iqtisad al Islamy* "Islamic Economics," Jan. 27, 2007, www.islamic-world.net/economics/index.htm

"Islamic banking," http://en.wikipedia.org/w/index.php?title=Islamic_banking&printable=yes

There are three dictionary definitions for usury: 1) interest; 2) lending of money with interest charged for its use especially at exorbitant rates; 3) interest in excess of a legal rate.

"Microfinance," http://en.wikipedia.org/w/index.php?title=Microfinance&printable=yes

"JAK members bank," http://en.wikipedia.org/w/index.php?title=JAK_members_bank&printable=yes

Mark Anielski, "An Assessment of Sweden's No-Interest Bank," January 16, 2004; www.jak.se

"Rotating Savings and Credit Association,"
http://wikipedia.org/w/index.php?title=Rotating_Savings_and_Credit_Association&print
"Ask the World's Economic Leaders to Make Microfinance a Focus," 2008, www.lendtoendpoverty.org/democrats/ Rona Fried,
"Investing in People," *E Magazine*, Jan/Feb 2009
Muhammad Yunus, "The Grameen Bank," *Scientific American*, Nov. 1999
Debate between Muhammad Yunus and Michael Chu, "Is it fair to do business with the poor?" World Microfinance Forum,
Oct.1-2, 2008
Jonathan C. Lewis, "What Would Leland Stanford Do?"
Accion, "our mission," www.accion.org/about_our_mission.asp
Martin Crutsinger, "Bernanke Gets Behind Small Loans," AP, Nov. 7, 2007
Lee Altenberg, "Beyond Capitalism: Leland Stanford's Forgotten Vision," *Sandstone and Tile*, Winter 1990, Stanford Historical
Society, http://dynamics.org/~altenber/PAPERS/BCLSFV/
Melissa Hoover and Beadsie Woo, "A cure for capitalist malaise: Turn workers into owners, *Christian Science Monitor*, Jan. 17,
2010
Fred Freundlich, "The Mondragon Cooperative Corporation (MCC): An Introduction," paper presented at conference sponsored
by National Bureau of Economic Research, May 22-23, 1998, www.ownershipassociates.com/mcc-intro.shtm
Georgia Kelly, Shaula Massena, "Mondragon Worker-Cooperatives Decide How to Ride Out a Downturn," June 5, 2009,
www.yesmagazine.org/issues/the-new-economy/mondragon-worker-cooperatives-de...
Sergio Lub, "The Mondragon Cooperatives Experience," Jan. 4, 2009, http://model-
economy.wikispaces.com/Mondragon+Cooperatives
"Mondragon Cooperative Corporation,"
http://en.wikipedia.org/w/index.php?title=Mondrag%C3%B3n_Cooperative_Corporation...
These sources differ about the number of companies and worker-owners in Mondragon, due perhaps to growth in the past decade.
William Greider, "The Future of the American Dream," *The Nation*, May 6, 2009,
www.thenation.com/doc/20090525/greider/print?rel=nofollow
Gorz in Ervin Laszlo, *The Choice: Evolution or Extinction?* Putnam 1994
"Guaranteed minimum income," http://en/wikipedia.org/w/index.php?title=Guaranteed_minimum_income&printable=yes
"'Social Credit' by Major Clifford Hugh Douglas," www.mondopolitico.com/library/socialcredit/socialcredit.htm "Canadian
social credit movement," http://en.wikipedia.org/w/index.php?title=Canadian_social_credit_movement&printable=yes
Thomas Paine, *Agrarian Justice*, 1795
Rene Heeskens, "Earth Dividend and Global Basic Income: A Promising Partnership," www.globalincome.orgEnglish/Earth-
Dividend.html
BIEN: www.basicincome.org/bien/
Philippe Van Parijs, "A Basic Income for All," http://bostonreview.net/BR25.5/vanparijs.html
See James Tobin, Joseph A. Pechman, & eter M. Mieszkowski, "Is a Negative Income Tax Practical?" *Yale Law Journal* 77
(1967)
Mother survey: *Mothering*, Nov/Dec 2007, http://pewresearch.org/pubs/536/working-women
Karl Widerquist and Michael A. Lewis, "An Efficiency Argument for the Basic Income Guarantee," updated January 2005
**Their equation is "After-tax income (D) equals private income (Y) times one minus the marginal tax rate (t) plus the grant (G): D = Y
(1-t) + G."**
Philippe Van Parijs, "Does Basic Income Make Sense as a Worldwide Project?" IXth BIEN Congress, Sept. 14, 2002,
www.globalincome.org/English/VanParis-WordlwideBI.html
Gianluca Busilacchi, "Two Problems, One Solution: The Earth Basic Income, *Avinu*s, www.avinus-magazin.eu/html/busilacchi_-
_two_problems_one.html
Rene Heeskens, "Earth Dividend and Global Basic Income:
A Promising Partnership," www.globalincome.org/English/Earth-Dividend.html
E.F. Schumacher, *Small Is Beautiful: Economics as if People Mattered,* Harper & Row, 1973
"Appropriate Technology," http://Isa.colorado.edu/essence/texts/appropriate.htm
Jill Zeman, "Water Filtering Bike on Display," AP, 2009
Aquaduct YouTube Demonstration Video, www.youtube.com/watch?v-U-mvfjyiao
A-T contest: Innovate or Die Competition, www.innovate-or-die.com
Pagan Kennedy, "Necessity is the Mother of Invention, *New York Times*, Nov. 30, 2003
Appropriate technology," http://en.wikipedia.org/w/index.php?title=Appropriate_technology&printable=yes

Chapter 11: Population and Poverty

Population Institute, "Population and Global Poverty: MDG #1"
**The United States is 142nd out of 192 nations in crude birth rate, that is, 50 nations have a lower birth rate. For an industrialized
nation, U.S. birth rate is high.**
"Sub-Saharan Africa," http://en.wikipedia.org/wiki/Sub-Saharan_Africa
Map of world fertility rates: http://en.wikipedia.org/wiki/File:Countriesbyfertilityrate.svg
**Note the ecological footprint is not the same as the carbon footprint. An ecological footprint measures human demand on the Earth's
ecosystems and their ability to regenerate. It is a measure of environmental sustainability and can be used to compare consumption**

and lifestyles for both individuals and countries. The ecological footprint may be combined with other indicators such as biodiversity for a more complete picture. The carbon footprint part of the ecological footprint relates specifically to one's use of stored carbon in the form of fossil fuels. And some are now adding a water footprint.

George Monbiot, "Population is just a sidekick to the real big baddie – consumption," http://www.guardian.co.uk/environment/georgemonbiot/2011/oct/27/population-consumption-threat-to-planet

Agrimonde1: "Best Predictions," *Futurist* magazine, Jan/Feb 2012

Wackernagel re Earth's regenerative capacity: Lester R. Brown, *Plan B 2.0*, W.W. Norton, 2006

"Carbon Emissions 1980," http://www.worldmapper.org/posters/worldmapper_map296_ver5.pdf

Carrying Capacity: "Food and Soil," http://www.theglobaleducationproject.org/earth/food-and-soil.php

Brazilian Fertility Rate: Cynthia Gorney, "Machisma," *National Geographic*, September 2011

An example of more credible population estimates is *Food, Land, Population and the U.S. Economy* **(1994) by Cornell professor of ecology and agriculture David Pimentel and Mario Giampietro, senior researcher at the Instituto Nazionale della Nutrizione, Rome. According to this study, the maximum sustainable population for the United States is 200 million, a one-third reduction over current numbers, and their sustainable estimates for the world would be about one-third of present numbers, or two to three billion. But we see that several countries have voluntarily reduced their birth rate this much in a generation. It does not require government coercion or worse.**

Voluntary Human Extinction Movement, www.vhemt.org/; www.vhemt.org/aboutvhemt.htm; see also www.dieoff.org/

"Smallpox," http://en.wikipedia.org/wiki/smallpox; www.vhemt.org/death.htm

Jacques Yves Cousteau, "Let's Develop Wells and Educate Third World Women," *CSM*, 1993

Population Reference Bureau, http://www.prb.org/Articles/2001/MostEuropeanWomenUseContraceptives.aspx

U.S. Catholic priests reject contraceptive ban: http://national-coalition.org/marriage/contrace.html

Keith Soko, "Bishops don't speak for most Catholics on contraception," Feb. 4, 2012, http://www.cnn.com/2012/02/03/opinion/soko-catholic-contraception/index.html

Elizabeth Day, "Most Catholic priests 'do not support Rome over contraception," *The Telegraph*, April 6, 2003, http://wrn.org/articles/15110/?&place=uk-ireland&section=surveys

Opposing human exterminism: www.vhemt.org/death.htm

Ariel David, "Leaders reject UN funding plea at food meeting," AP, November 17, 2009

Humans part of nature? www.vhemt.org/ecology.htm

UN Wire, "Reduced Birthrate Offers Model for Other Countries, Institute Says," January 4, 2002, www.unwire.org/unwire/20020104/22835_story.asp

Hurrjaan Kamp, "Money should work for us, not the other way around," *Ode*, Sept. 2005

Alma De Walsche and John Vandaele, "Interview with Monetary Specialist Bernard Lietaer," Mondiaal Nieuws, April 1, 2009

U.S. tied for second-to-last place (among industrialized nations) in neonatal mortality with Hungary, Malta, Poland, and Slovakia

Juliana Barbassa, "More Brazilian moms-to-be pushing for say in childbirth, AP, August 12, 2012

U.S. caesarean rate in 2005 was 30.2%, similar to that of Chile and Turkey; there are even higher rates in Puerto Rico and Brazil; Austria, Canada, and England had 22%; Netherlands, Guatemala, and Peru had between 10 and 15%.

Wendy Ponte, "Cesarean birth in a culture of fear," *Mothering*, Sept.-Oct., 2007)

MomsRising.org, "She would have given up on breastfeeding," http://momsrising.democracyinaction.org/o/1768/t/9251/p/dia/action/public/?action_KEY=923

Christopher J. Ruhm, "Parental Leave and Child Health," *Journal of Health Economics*, 2000, v19, 931-960, www.nber.og/papers/w6554

Recently in the United States, several pro-life Representatives in Congress sponsored the Ryan-DeLauro bill, "Preventing Unintended Pregnancies, Reducing the Need for Abortion and Supporting Parents Act." For his pains, Congressman Tim Ryan was disowned by the pro-life movement. According to author Cristina Page, there is not a single pro-life group in the United States that supports contraception, although 80% of pro-life Americans do support birth control. The vast majority of religious individuals including Catholics and evangelicals are in favor of contraception, so it is not clear who the pro-life establishment is speaking for.

Cristina Page, "Why the Anti-Choice Movement Is on the Verge of Civil War," August 1, 2009, www.alternet.org/module/printversion/141673

Maternal mortality: www.who.int/whosis/en/

Fourteen countries have maternal mortality ratios of at least 1000 per 100 000 live births, of which all but Afghanistan are in sub-Saharan Africa. http://www.who.int/making_pregnancy_safer/topics/maternal_mortality/en/

Bolivia: http://upsidedownworld.org/main/index2.php?option=com_content&task=view&id=538...

"Land Reform," http://en.wikipedia.org/w/index.php?title=Land_reform&printable=yes

Alain de Janvry and Elisabeth Sadoulet, "Land Reform in Latin America: Ten Lessons toward a Contemporary Agenda," prepared for World Bank's Latin American Land Policy Workshop, Pachuca, Mexico, June 14, 2002

Timberly Ross, "Indian tribes buy back thousands of acres of land," AP, Dec. 27, 2009

Song Jung-a, Christian Oliver, and Tom Burgis, "Daewoo to cultivate Madagascar land for free," *Financial Times*, Nov. 19, 2008, http://www.ft.com/cms/s/0/6e894c6a-b65c-11dd-89dd-0000779fd18c.html#axzz1m74Ah6F3

Monsanto: http://www.guardian.co.uk/environment/2007/jul/26/gmcrops; http://www.naturalnews.com/032826_Monsanto_seed_supply.html#ixzz1mJE1bM7x

GM Watch, "Who Owns Nature," http://www.gmwatch.org/gm-firms/10558-the-worlds-top-ten-seed-companies-who-owns-nature

Pesticide Action Network, "How Brazil Stopped Monsanto's Bullying," June 29, 2012, http://readersupportednews.org/opinion2/271-38/12169-how-brazil-stopped-monsantos-bul

John Vidal, environment editor, "WikiLeaks: US targets EU over GM crops: US embassy cable recommends drawing up list of countries for 'retaliation' over opposition to genetic modification," *Guardian*, January 3, 2011, http://www.guardian.co.uk/world/2011/jan/03/wikileaks-us-eu-gm-crops

Anthony Gucciardi, "Blatant Corruption Exposed as EU Blocks France's Ban on Monsanto's GMO Maize," http://www.nationofchange.org/print/16546

Anna Lekas Miller, "Occupy vs. Monsanto: Activists, Farmers Fight the Corporation They Fear Will Take Over All America's Crops," http://www.alternet./org/module/printversion/153982

Vandana Shiva: George Lerner, CNN, http://articles.cnn.com/2010-01-05/world/india.farmer.suicides_1_farmer-suicides-andhra-pradesh-vandana-shiva?_s=PM:WORLD

Anthony Gucciardi, "Monsanto's GMO Seeds Contributing to Farmer Suicides Every 30 Minutes," April 5, 2012, http://www.nationofchange.org/monsanto-s-gmo-seeds-contributing-farmer-suicides-every-30-minutes-1333632229

GreenPeace, "Monsanto's 7 Deadly Sins," March 10, 2008, http://www.greenpeace.org/international/en/publications/reports/7-deadly-sins/

EcoWatch, "Citizens to Monsanto: 'Get out of Hawaii'", July 5, 2012, http://readersupportednews.org/news-section2/312-16/12263-focus-citizens-to-monsanto-ge

National Multi Housing Council, www.nmhc.org/Content/ServeContent.cfm?ContentItemID=1152

Mary Beth Ginder, "International Community Is Slow to Comprehend 'Urbanization Problem,'" *Popline*, Jan-Feb. 2007

Taylor Barnes, "Megacities strive to survive," *The Christian Science Monitor Weekly*, June 18, 2012

Yinka Ibukun, "In the slums of Lagos, a toilet is a luxury item," *The Christian Science Monitor Weekly*, June 18, 2012

Sara Miller Llana, "In Mexico City, water from buckets, not taps," *The Christian Science Monitor Weekly*, June 18, 2012

Vaishnavi Chandrashekhar, "Streets of Mumbai groan with traffic," *The Christian Science Monitor Weekly*, June 18, 2012

Josh Harkinson, "What's Your Water Footprint?" *Mother Jones*, July/August 2009

Tara Lohan, "Maude Barlow: The Growing Battle for the Right to Water," Feb. 14, 2008, www.alternet.org/module/printversion/76819

Doug Struck, "Warming Will Exacerbate Global Water Conflicts," *Washington Post*, August 20, 2007

Julie Chowdhury, "The Harsh Economics of the Global Water Crisis, Oct. 4, 2008, www.alternet.orgmodule/printversion/101145

Arjen Y. Hoekstra, Ashok K. Chapagain, and Mesfin M. Mekonnen, "Water Footprint Calculator," www.waterfootprint.org/?page=files/WaterFootprintCalculator

A.Y. Hoekstra and A.K. Chapagain, "Water Footprints of Nations," www.waterfootprint.org/Reports/Hoekstra_and_Chapagain_2006.pdf

Peter Rogers, "Facing the Freshwater Crisis," *Scientific American*, August, 2008

Timothy P. Carney, "T. Boone Pickens Wants Your Water," Aug. 21, 2008, www.dcexaminer.com/opinion/columns/TimothyCarney/T._Boone_Pickens_wants_your_water.html

See Maude Barlow and Tony Clarke, *Blue Gold: The Fight to Stop Corporate Theft of the World's Water*

Tara Lohan, "Is the American Southwest Running Dry?" Jan. 24, 2009, www.alternet.org/module/printversion/121535

see Paul Simon, *Tapped Out:The Coming World Crisis in Water and What We Can Do About It*, 1998

Deborah Rich and Jason Mark, "Hold Steady: Population Growth on a Shrinking Planet," June 9,2009, www.commondreams.org/print/43122

Doug Struck, "Warming Will Exacerbate Global Water Conflicts," August 20, 2007, www.washingtonpost.com/wp-dyn/content/article/207/08/19/AR2007081900967_p...

Nile Plan: Charles J. Hanley, AP, Dec. 27, 2006

Rose George, *The Big Necessity: The Unmentionable World of Human Waste and Why It Matters,* Metropolitan, 2008 reviewed *Scientific American*, Jan. 2009

Kathy Freston, interview with Michael Greger, MD, "Factory Farmed Meat Can Trigger a Global Pandemic that Wipes Out 60% of Those Infected," Jan. 9, 2010, www.alternet.org/module/printversion/144963

Michael Greger, "Ten Things You Didn't Know about Bird Flu," *Ecologist*, Feb. 2009, http://tinyurl.com/BirdFluScience

See free book by Michael Greger, *Bird Flu: A Virus of Our Own Hatching*, www.BirdFluBook.org

Arun Gupta, "More Pain for Devastated Haiti: Under the Pretense of Disaster Relief, U.S. Running a Military Occupation," Feb. 13, 2010, www.alternet.org/module/printversion/145647

Doctors Without Borders press release, "Doctors Without Borders Plane with Lifesaving Medical Supplies Diverted Again from Landing in Haiti: Patients in Dire Need of Emergency Care Dying from Delays in Arrival of Medical Supplies," Jan. 19,2010, www.doctorswithoutborders.org/press/release.cfm?id=4176

Median income: www.globalrichlist.com

Part Three: What Hath Man Wrought?
Chapter 12: Dangerous Technology
The Futurist, March-April 2009

Francis Fukuyama, *Our Posthuman Future: Consequences of the Biotechnology Revolution*, Farrar, Straus and Giroux, 2002

Nanotech worry: *Ecologist*, February 2008

Synthetic biology: Jaron Lanier, "Jaron's World," *Discover*, undated

12,000 chemical plants: Beverly Lumpkin, AP, April 24, 2007

Jacques-Yves Cousteau, "Attacking Power with Wisdom," in *Waging Peace II: Vision and Hope for the 21st Century*, ed. David Krieger and Frank K. Kelly, Noble Press, 1992

Sue Sturgis, "Startling Revelations about Three Mile Island Disaster Raise Doubts over Nuke Safety," *Facing South*, online magazine of the Institute for Southern Studies, April 3, 2009, www.alternet.org/module/printversion/134977

Harvey Wasserman & Norman Solomon, with Robert Alvarez & Eleanor Walters**,** *Killing Our Own*: *The Disaster of America's Experience with Atomic Radiation, Delta, 1982*, http://www.ratical.org/radiation/KillingOurOwn/

Ibid,, Chapter 14, "People Died at Three Mile Island," http://www.ratical.org/radiation/KillingOurOwn/KOO14.html

Alexey V. Yablokov; Vassily B. Nesterenko; Alexey V. Nesterenko (2009). *Chernobyl: Consequences of the Catastrophe for People and the Environment* (Annals of the *New York Academy of Sciences*) (paperback ed.). Wiley-Blackwell. ISBN 978-1573317573.

Tritium: Dave Gram, AP, February 2, 2010

 Map of leaking sites: www.arkansasonline.com/leakingnukes/

Michael Savage, "A One Billion Pound Nuclear White Elephant," *The Independent*, April 4, 2009

For information on ocean dumping of nuclear waste see www.usatoday.com/news/nation/2005-11-01-weapons-ocean_x.htm; www.nas.gov.au/fSheets/fs129.html; http://en.wikipedia.org/wiki/Vieques_Puerto_Rico#Public_health

"Munitions Dumping at Sea," http://scienceblogs.com/deepseanews/2007/06/munitions_dumping_at_sea.php

Malcolm Fraser, "From Fukushima to disarmament," July 5, 2011, http://www.abc.net.au/environment/articles/2011/07/05/3260732.htm

"'Hundreds of problems' at EU nuclear plants,"BBC News Europe, http://www.bbc.co.uk/news/world-europe-19804817?print=true

Justin McKeating, "No summer blackouts: nuclear scaremongering in Japan proven false," Sept. 10, 2012, http://www.greenpeace.orge/international/en/news/Blogs/nuclear-reaction/no-summer-black...

Brad Jacobsen, "The Worst Yet to Come? Why Nuclear Experts Are Calling Fukushima a Ticking Time-Bomb," May 4, 2012, http://www.alternet.org/print/story/155283/the_worst_yet_to_come_why_nuclear_experts_...

Harvey Wasserman, "The Devil Still Has Us Death Dancing at Fukushima," August 8, 2012, http://www.commondreams.org/view/2012/08-0?print

Jamie McGinnes, "Catastrophic nuclear reactor meltdowns like Chernobyl or Fukushima could happen every ten to twenty years, scientists warn," *Daily Mail*, May 24, http://www.dailymail.co.uk/news/article-2149154/Catastrophic-nuclear-reactor-meltdowns-like-Chernobyl-Fukushima-happen-20-years-scientists-warn.html#ixzz1vuJMdKBD

Diane D'Arrigo, "Mainstreaming Nuclear Waste," Nuclear Information and Resource Service, May 14, 2007, www.projectcensored.org/top-stories/articles/14-mainstreaming-nuclearwaste/

The metric ton weighs 2,240 pounds while the standard ton used in U.S. and Canada is 2,000 pounds.

Rupert Neate, "Nuclear power turns to developing world as west recoils from Fukushima," http://www.guardian.co.uk/business/2012/oct/28/nuclear-power-developing-world-west-r...

 "Designing Rules for Designer Babies," *Scientific American*, May, 2009

AI quote: http://www.links999.net/robotics/artificial_intelligence/AI_ethical.html

John Markoff, "Scientists Worry Machines May Outsmart Man," *New York Times*, July 25, 2009, http://www.nytimes.com/2009/07/26/science/26robot.html

Charles W. Bailey, Jr., "Thinking Robots," http://old.cni.org/pub/LITA/Think/Bailey.html

Vernor Vinge, "What Is the Singularity?" Vision-21 Symposium, March 30-31, 1993, http://mindstalk.net/vinge/vinge-sing.html

Nick Bostrom, "Ethical Issues in Advanced Artificial Intelligence," http://www.nickbostrom.com/ethics/ai.html

Michael Specter, *Denialism*, Penguin Press, 2009

Eddington quote: www.quotationspage.com/quote/27289.html

Bill McKibbens, *Enough: Staying Human in an Engineered Age*, Henry Holt, 2003; Gina Kolata, "Scientists Place Jellyfish Genes into Monkeys," *New York Times*, Dec. 23, 1999

Bill of Rights for Future Generations: www.eurocbc.org/page721.html; www.cousteau.org/about-us/futregen

 Ecuador: Dashka Slater, "Law of Nature," *Sierra*, January/February, 2009

Regina Birner (International Food Policy Research Institute) and Gabriela Alcaraz (University of Göttingen), "Policy Dialogues on Genetically Modified Crops in Europe: Insights for African Policy Dialogues on Biotechnology," http://www.ifpri.org/sites/default/files/pubs/africadialogue/pdf/policydialoguespaper.pdf

Chapter 13: Time to Unplug?

R. Spencer Oliver, "What U.S. Politicos Can Learn from Denmark," http://www.campaignsandelections.com/print/258767/what-us-politicos-can-learn-from-denmark.thtml

Elizabeth May, "A Prescription For A Healthier Democracy: Ban Political TV Advertising," http://www.elizabethmay.ca/in-the-news/island-tides/a-prescription-for-a-healthier-democracy-ban-political-tv-advertising-2/

Dick Meyer, *Why We Hate Us*, Crown Publishers, 2008

Byron Reeves and Clifford Nass, *The Media Equation: How People Treat Computers, Television, and News Media Like Real People and Places*, Cambridge University Press, 1996

"Dept. of Surveillance," *Smithsonian magazine*, September, 2006

Rachel Dretzin, producer/director, "Digital Nation," *Frontline*, February 2, 2010

Mark Bauerlein, *The Dumbest Generation*, Tarcher/Penguin, 2008

Nicholas Carr, "Is Google Making Us Stupid?" *The Atlantic*, July/August 200

Tony Wagner, *The Global Achievement Gap*, Basic Books, 2008

Robert Roy Britt, "Is the Internet Warping Our Brains?" Feb. 24, 2009, www.livescience.com/culture/090224-internet-brain.html

Tyler Cowen, *Create Your Own Economy*, 2009

Diamond, *Guns, Germs, and Steel*

"Social Media," http://en.wikipedia.org/wiki/Social_media

"Facebook," http://en.wikipedia.org/wiki/Facebook

"Who Invented Texting and Texting History" http://www.sophisticatededge.com/who-invented-texting-and-texting-history.html

http://www.deseretnews.com/article/700074142/Texting-in-school-at-epidemic-levels.html?pg=2&s_cid=s10

Suzanne Choney, "Facebook Timeline: There's No Escaping It Now," http://www.technolog.msnbc.msn.com/technology/technolog/facebook-timeline-theres-no-escaping-it-now-84762

Andrew Blum, "Speed Trap: We built the Internet. Now we're stuck with it.," *Newsweek*, September 24, 2012

Eric Schiller, "Social Media: Moving toward a Brave New World?" http://beyondgrowth.net/social-criticism/social-media-moving-towards-a-brave-new-world/

Marie Winn, *The Plug-in Drug: Television, Computers, and Family Life*, Penguin Books, revised edition 2002

World of Warcraft: Anita Chang, AP, Feb. 8, 2010

Julia Steiny, "The most educational toys are completely free or mostly," http://www.educationnews.org/parenting/julia-steiny-the-most-educational-toys-are-completely-free-or-mostly/

http://forum.physorg.com/index.php?showtopic=12926

Frank Jordans, "UN says 60% have cell phone plan," AP, March 3, 2009

Jonathan Liu, "The 5 best toys of all time," *Wired*, Jan. 2011, http://www.wired.com/geekdad/2011/01/the-5-best-toys-of-all-time/all/1

Lowell Monke, "Unplugged Schools," *Orion*, Sept/Oct. 2007, www.orionmagazine.org/index/php/articles/article/334/

Todd Oppenheimer, *The Flickering Mind*, Random House, 2003

Patricia Greenfield: "Faster internet, slower children," *Ecologist*, March, 2009

Lili Ladaga, "A Decade of the Internet," Yahoo News, Dec. 7, 2009

Ellen Nakashima, "Global Cyber-hit," *Washington Post*, Feb. 14, 2010

see E.M. Forster, The Machine Stops," (short story) http://archive.ncsa.illinois.edu/prajlich/forster.html

Elisabeth Bumiller and Thom Shanker, "Panetta: 'CyberPearl Harbor' looms for U.S," *The New York Times*, Oct. 13, 2012

EPA, "Cleaning Up Electronic Waste," http://www.epa.gov/international/toxics/ewaste/index.html

Ethan Goffman, "E-Waste Not," *E Magazine*, September/October 2011

"Electronic Waste," http://en.wikipedia.org/wiki/Electronic_waste

Basel Action Network (BAN) http://www.ban.org/

"After Dump, What Happens to Electronic Waste?" NPR, December 21, 2010, http://www.npr.org/2010/12/21/132204954/after-dump-what-happens-to-electronic-waste

Basel Ban ratifications: http://www.basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx

Wendy Koch, "Developing world will soon produce more e-waste than developed nations," *USA Today*, April 30, 2010, http://content.usatoday.com/communities/greenhouse/post/2010/04/developing-world-will-produce-twice-the-e-waste-of-developed-countries-by-2016/1

U.S. e-waste exports to China, India, and Pakistan: Basel Action Network and the Silicon Valley Toxics Coalition, "*Exporting Harm: The Techno-Trashing of Asia,*"

Francesca Lyman, "The Ever-Changing Landscape of E-Waste Recycling," Popular Mechanics, May 6, 2010, http://www.popularmechanics.com/science/environment/recycling/changing-e-waste-recycling-landscape

Electronics use electricity: Rick Montgomery, McClatchy Newspapers, November 2, 2009

"Microwave," http://en.wikipedia.org/w/index.php?title=Microwave&printable=yes

Wi-Fi: Mark Anslow, "The Gathering Brainstorm," *Ecologist*, December/January 2008

"George Carlo," http://en.wikipedia.org/w/index.php?title=George_Carlo&printable=yes

Erika Alexia Tsoukanelis, "To Call or Not to Call? *E Magazine*, Nov/Dec 2008

http://reviews.cnet.com/cell-phone-radiation-levels/?tag=mncol;txt

University of Pittsburgh Cancer Institute memo, www.upci.upmc.edu/news/upci_news/2008/072308_celladvisory.html

20 lowest-radiation cell phones (United States), http://reviews.cnet.com/4520-6602_7-5020356-1.html

20 highest-radiation cell phones (United States), http://reviews.cnet.com/4520-6602_7-5020357-1.html?tage=Inav

The Safe Wireless Initiative, www.safewireless.org

Dr. Heather McKinney and Dr. Kerry Crofton, "SWI-ES Survey: A Health Study on the Prevalence of Electro-Sensitivity Conditions," Nov. 1, 2007

Pentagon microwaves: *Ecologis*t, Dec/Jan 2008

Technorati, "Do Radar Systems Cause Global Warming?" August 30, 2007, www.stoptheradar.blogspot.com/

Ethan Clark and others, "I Think I Solved Global Warming," Feb. 24, 2007, http://lofi.forum.physorg.com/I-think-I-solved-Global-Warming_12926.html

Part Four: Healing People
Chapter 14: Trouble Spots and Troubled People
"Failed States Index 2009," www.foreignpolicy.com/articles/2009/06/22/the_2009_failed_states_index
Mahmood Khaghan, "Get nuclear option off the table," *Asia Times*, http://www.atimes.com/atimes/printN.html
 Sir Yehudi Menuhin, "The Limits of All 'Isms,'" *Waging Peace II*, ed. David Krieger and Frank K. Kelly, Noble Press, 1992
Olesya Dmitracova, "Geneva Conventions are obscure or ineffective—poll," Reuters, August 6, 2009,
www.alertnet.org/thenews/newsdesk/L6422096htm
"Responsibility to protect," http://en.wikipedia.org/w/index.php?title=Responsibility_to_protect&printable=yes
Steven Salaita, "Violence: Spot the Muslim," *Northwest Arkansas Newspapers*, Dec. 7, 2009
Mohja Kahf, "This Muslim Is As American As the Next Person," *The Washington Post*, July 29, 2007
"Israeli Violation: History and Theory," STUDY GUIDE: International Law and Israel,
http://www.israellawresourcecenter.org/internationallaw/studyguides/sgil3f.htm
Hussein Ibish, "The Anti-Balfour Declaration," July 10, 2012, http://www.thedailybeast.com/articles/2012/07/10/the-anti-balfour-declaration.html
Tomer Zarchin, " Legal expert: If Israel isn't occupying West Bank, it must give up land held by IDF**,"** *Haaretz*, Sept. 22, 2012, http://www.haaretz.com/news/diplomacy-defense/legal-expert-if-israel-isn-t-occupying-west-bank-it-must-give-up-land-held-by-idf-1.449909
Israeli citizens abroad estimated by Israel Immigration and Absorption Ministry: http://pnews.org
Howard Cort, "Alternative Approaches to Palestinian-Israeli Coexistence," www.middleeast.org/world/howardcort.htm
Lama Abu-Odeh, "The Case for Binationalism," http://bostonreview.net/BR26.6/abu-odeh.html
Jerome M. Segal, "A Binational Confederation," http://bostonreview.net/BR26.6/segal.html
Fred Foldvary, "Who shall own Jerusalem?" www.progress.org/fold164.htm
Dr. Jeffrey Elliot, "The Middle East Crisis: an Interview with Joseph Abileah," http://secession.net/israel-palestine-confederation.html
Mubarak Awad and Abdul Aziz Said, "Eight Steps to Israeli Palestinian Peace, Non Violence International, November 2, 2000, www.peaclink.nu/Konfliktloesning/eight_steps_israelpal.html
Christie Storm, "Temple ends 28 years of wandering," *Arkansas Democrat-Gazette*, Dec. 10, 2009; www.templeofpeace.com
Elise Boulding, "The Dialectics of Peace," Center for Conflict Analysis and Resolution, 1990, www.gmu.edu/depts/icar/op_3_bouldings.pdf
David Maybury-Lewis, *Indigenous Peoples, Ethnic Groups, and the State*, Allyn & Bacon, 1997
Pablo Gorondi, "Slovakia limits language," AP, Sept. 19, 2009
Turkey/Kurds: Suzan Fraser, AP, Nov. 14, 2009
G.A. Bradshaw et al, "Elephant Breakdown," *Nature*, February 24, 2005
Justin Pope, "New GI benefits vary widely by state," AP, July 6, 2009
Rick Steves, "Three Flags over Europe," *Arkansas Democrat Gazette*, December 14, 2008
Molly Conisbee and Andrew Simms, "Environmental Refugees: The Case for Recognition," New Economics Foundation, 2003
Phil Bartsch, "Pacific Exodus Likely," *Courier Mail*, Oct. 9, 2006, www.news.com.au/couriermail/story/0,23739,20545621-953,00.html

Chapter 15: Repairing the World
"*Tikkun olam*," Wikipedia
"*Tikkun Olam*: Perfecting the World," www.innerfrontier.org/Practices/TikkunOlam.htm
James Graham, "Gorbachev's *Glasnost*," www.historyorb.com/russia/glasnost.shtml
Pamuk: Hillel Italie, AP, Oct. 13, 2006) (Jonathan Franklin, "The Pinochet Files," *Guardian*, Sept. 10, 2003, www.guardian.co.uk/world/2003/sep/10/chile.jonathanfranklin/print
 Honor the Earth: "Earth Talk," *E Magazine*, www.emagazine.com; www.honorearth.org
Townsend quoted *Little Rock Free Press*, 2007
Michelle Malese, "Restorative Justice," Oct. 2003, www.beyondintractability.org/essay/restorative_justice/
"Restorative justice, http://en.wikipedia.org/w/index.php?title=Restorative_justice&printable=yes
"Crime meetings 'cut re-offences," BBC News, 2007/02/05
Community Justice Initiative, www.cjiwr.com
Victim-Offender Reconciliation Program, www.vorp.com/
Rwanda: Terry Tempest Williams, *Utne Reader*, Nov/Dec 2008
Evie Blad, "Justice in genocide said to need realism," *Arkansas Democrat-Gazette,* May 22, 2012
Eric Brahm, "Truth Commissions," June 2004, www.beyondintractability.org/essay/truth_commissions
Stan Winer, "Truth Betrayed," May 5, 2002, www.zmag.org/content/Africa/winer_truth-rec-omission.cfm
"What Is Truth and Reconciliation?" www.greensborotrc.org/truth_reconciliation.php
Jon Lee Anderson, "Lorca's Bones," *The New Yorker*, June 22, 2009
 Philip Gourevitch, "Pol Pot's Children," *New Yorker*, Aug. 10, 1998
Raphael Minder, "Spanish Judge Is Acquitted of Abusing His Authority," *New York Times*, February 27, 2012, http://www.nytimes.com/2012/02/28/world/europe/prominent-spanish-judge-cleared-of-abusing-powers.html

Unfortunately, Mr. Garzón lost his trial on a second charge of illegally ordering a wiretap in a case concerning massive corruption in the ruling party, and he was suspended from acting as a judge for 11 years. This decision led to mass protests in Spain and to condemnation by international human rights organizations, because Garzón was widely regarded as an independent judge who was not afraid to take on human rights cases. Reed Brody of Human Rights Watch said: "The real losers are the reputation of the Spanish judiciary and those — in Spain, in detention at Guantánamo or in countries around the world where there is no justice — who knew they could count on at least one independent judge to apply human rights laws without fear of the political consequences."

Rudd apology: Richard Neville, "Seismic Shifts Down Under," *Adbusters*, Jan/Feb 2009

Mike Ives, "US starts landmark Agent Orange cleanup in Vietnam," AP, 8/8/2012, http://news.yahoo.com/us-starts-landmark-agent-orange-cleanup-vietnam-100542424.html

"Letter to Obama from Czech Republic: We want democracy!" Nov. 11, 2008, http://www.europeforpeace.eu/en/853_letter-to-obama-from-czech-republic-we-want-democracy

www.no-bases.org

Chalmers Johnson, "How to Deal with America's Empire of Bases," July 3, 2009, Tom Dispatch, http://informationclearinghouse.info/article22971.htm

"Two-thirds of Czechs against U.S. radar base," Czech Press Agency, www.nezakladnam.cz/en/1560_two-thirds-of-czechs-against-us-radar-base

Dud Hendrick, lecture in Fayetteville, Arkansas, April 27, 2009

Kamilla Ekholdt Christensen, Jennifer Mack, and Jeppe Serensen, "The Forced Relocation of the Indigenous People of Uummannaq, or How to Silence a Minority

Colin Woodard, "US cold-war waste irks Greenland," *Christian Science Monitor*, Aug. 22, 2008, http://features.csmonitor.com/environment/2008/08/22/us-cold-war-waste-irks-greenland/; www.no-bases.org/

Alex Daniels, "Arkansan called back to tackle USDA bias," *Arkansas Democrat-Gazette*, Nov. 15, 2009

Herbert P. Bix, "From Nanjing 1937 to Fallujah 2004," ZNet, May 3, 2004, www.zmag.org/content/print_article.cfm?item ID=5446&sectionII)=17

"Universal Jurisdiction," www.amnesty.org/en/international-justice/issues/universal-jurisdiction

"Universal Jurisdiction," http://en.wikipedia.org/w/index.php?title=Universal_jurisdiction&printable=yes

Lisa Abend, "Will a Spanish Judge Bring Bush-Era Figures to Justice?" *Time,* March 31, 2009, www.time.com/time/printout/0,8816,1888572,00.html

Marjorie Cohn, "Spain Investigates What America Should," *San Francisco Chronicle*, April 6, 2009, www.globalpolicy.org/intljustice/universal/2009/0406should.htm

Aun Talbot, "Dutch Inquiry Finds Iraq War Illegal," Jann.23, 2010, www.informationcleainghouse.info/article24483.htm

Julian Amutuhaire, "Uganda: ICC faces widespread criticism," Communicating Justice, July 18, 2008, http://www.communicatingjustice.org/en/stories/06082008_uganda_icc_faces_widespread_criticism

Michael S. Rozoff, "To Back the International Criminal Court or Not?" http://www.lewrockwell.com/rozeff/rozeff43.html

30 % of vets suffer mental disorders: Michelle Roberts, AP, April 21, 2007

Helen Benedict, "Why Are Women Still Treated Like Second-Class Soldiers?" *The Nation*, May 25, 2009, www.alternet.org/module/printversion/140225)

Natalie Pompilio, "Lily Yeh: Beauty in Broken Places," http://www.yesmagazine.org/issues/the-yes-breakthrough-15/lily-yeh-beauty-in-broken-places

Barefoot Artists: http://www.barefootartistmovie.com/?page_id=7; http://www.barefootartists.org/barefootartists_rwanda.html; http://www.barefootartists.org/galleries/international/rwanda/index.html; http://www.barefootartists.org/barefootartists_awakeningcreativity.html

Chapter 16: Nonviolence and Peace Traditions

Academic Leadership Support, "8 Steps: Overview," www.ohrd.wisc.edu/onlinetraining/resolution/stepsoverview.htm

Jeanna Bryner, "Killer Whales Found to Settle Disputes with Paired Swimming," Fox News, August 24, 2006

Conflict resolution in animals: "Conflict Resolution," http://en.wikipedia.org/w/index.php?title=Conflict_resolution&printable=yes

See National Institute for Dispute Resolution, 1726 M St. NW, Suite 500, Washington, DC 20036-4502

Thomas Battles, U.S. Justice Dept. peacemaker: Jeff Kunerth, "Mediator works to keep the peace," *Orlando Sentinel*, October 13, 2012

Center for Nonviolent Communications, www.cnvc.org

Gene Sharp, *The Methods of Nonviolent Action*, 1973, available from War Resisters League; Jonathan Bartley, "Redemptive Violence Is a Myth," Nov. 12, 2008, www.guardian.co.uk/commentisfree/2008/nov/12/religion-christianity1/prin

Diana Francis, "War: justifiable or simply catastrophic?" Jan. 21, 2010, www.opendemocracy.net/print/49917

www.rescuekenya.org

http://rescuekenya.wordpress.com/2008/02/21/concerned-citizens-for-peace-initiative/

Luke Freeman, "Anthropology unites humankind rather than dividing it," *Guardian*, April 25, 2007, www.guardian.co.uk/science/story/0,,2064707,00.html

Dr. Lester Kurtz, "Globalizing Gandhi," lecture Fayetteville, Arkansas, Sept. 13, 2006

"The Singing Revolution" documentary film trailer, www.youtube.com/watch?v=DA9PmZo-2jo

Michael True, *An Energy Field More Intense than War*, Syracuse University Press, 1995

Peter Ackerman and Jack DuVall, *A Force More Powerful: A Century of Nonviolent Conflict*, St. Martin's Press, 2000
See Deborah White, "Wise and Prophetic Words of Martin Luther King, Jr.,"
http://usliberals.about.com/od/patriotactcivilrights/a/MLKWords.htm
Jeff Cohen and Norman Solomon, "The Martin Luther King You Don't See on TV," Media Beat 1/4/95,
www.fair.org/index.php?page=2269
Peace Parks: Mary C. Pearl, "Natural Solutions," *Discover*, Nov. 2006

Chapter 17: Hero Stories

"Metanarrative," www.sociology.org.uk/wslk5.htm
Lawrence LeShan, *The Psychology of War: Comprehending Its Mystique and Its Madness,* Helios, 2002
Walter Wink, "Facing the Myth of Redemptive Violence," Nov. 16, 2007,
www.ekklesia.co.uk/content/cpt/article_060823wink.shtml
James Juhnke and Carol M. Hunter, *The Missing Peace: The Search for Non-violent Alternatives in United States History*, Pandora, 2002
Scott Shane and Eric Schmitt, "CIA Deaths Prompt Surge in U.S. Drone Strikes," Jan. 23, 2010
Robert Moore and Douglas Gillette, *The Warrior Within*, Avon Books, 1992
Thomas Berry, in Matthew Fox, "The Hidden Spirituality of Men," *Ode*, October, 2008
Danger to journalists see Committee to Protect Journalists, www.cpj.org
Fridtjof Nansen: Tamim Ansary, "The greatest peacemaker you've never heard of," encarta.msn.com
Linn Ryne, Norwegian Ministry of Foreign Affairs, "Fridtjof Nansen,"
http://odin.dep.no/odin/english/p30008168/history/032005-990458/dok-bu.html

Another World War I humanitarian who is ignored in the United States although he was once its President is Herbert Hoover. As a private citizen with exceptional skills for organizing people, Hoover dedicated himself to the Belgian relief effort. From 1914 to 1917 he organized the feeding of over nine million starving people in Belgium and northern France, even using his personal fortune. Although Hoover later proved inadequate to the task of dealing with the 1930s economic depression, his earlier achievement in saving millions of lives should not be forgotten.

James C. Juhnke, "The Original Peacemakers: Native America," *Mennonite Life*, Dec. 2001
Lala Aziza: M. Elaine Combs-Schilling, *Fellowship*, May/June 1994
The Bill Moyers Journal, June 19, 2009; "Pray the Devil Back to Hell,"
http://en.wikipedia.org/w/index.php?title=Pray_the_Devil_Back_to_Hell&printable=yes
Kingston Reif, "Thirteen Days—and What Was Learned," *The Bulletin of Atomic Scientists*, http://www.thebulletin.org/web-edition/columnists/kingston-reif/13-days-and-what-was-learned

Tony Long, "Sept. 26, 1983: The Man Who Saved the World by Doing ... Nothing,"
http://www.wired.com/science/discoveries/news/2007/09/dayintech_0926

Part Five: Transformation

Chapter 18: Goodbye, Bad Old Memes

Admiral Gene La Rocque, PBS Documentary "The Secret Government," www.informationclearinghouse.info/article17720.htm
Virginia Scott Jenkins, *A History of an American Obsession*, Smithsonian, 1994; Ted Steinberg, *American Green: the Obsessive Quest for the Perfect Lawn*, W.W. Norton, 2007, http://blog.case.edu/case-news/2006/03/10/the_american_obsession_with_the_perfect_lawn
Weeds: Center for American Progress, "Top 100 Ways Global Warming Will Change Your Life, September 29, 2007, www.alternet.org/module/printversion/63895
F. Herbert Bormann and others, *Redesigning the American Lawn*, Yale University Press, 1993
"Cleaner Air: Gas Mower Pollution Facts," www.peoplepoweredmachines.com/faq-environment.htm
"Facing the Facts: Environmental Impacts of Home Lawn Care," www.purdue.edu/envirosoft/lawn/src/environmental.htm)
"Reasons to Oppose NATO," www.stopthenato.net/index.pp/m/zit/opt/read_e/id_p/10/id_s/320.html
Ian Traynor, "Preemptive Nuclear Strike a Key Option, NATO Told," *The Guardian*, January 22, 2008, www.projectcensored.org/top-stories/articles/21-nato-considers-first-strike-nuclear-o...
Democracy Now! Interview with Noam Chomsky, "Noam Chomsky on US Expansion of Afghan Occupation, the Uses of NATO, and What Obama Should Do in Israel-Palestine," April 3, 2009, www.democracynow.org/2009/4/3/noam
Prof. Rodrigue Tremblay, "Why Not Simply Ablish NATO?" Aug. 19, 2008, www.globalresearch.ca/PrintArticle.php?articleId=9874
Thomas Mowle, "NATO: The Laundry Wagon of a Unipolar World," paper presented at the annual meeting of International Studies Association 48th Annual Convention, Chicago, Feb. 28, 2007 www.allacademic.com/one/www/www/index.php?cmd=www_search$offset=0&li...
Chaminda Jayanetti, "Sri Lanka's self-signed death warrant," Open Democracy, Feb. 12, 2010, www.opendemocracy.net/print/50272
"Vengeance," *Holman Bible Dictionary*, www.studylight.org/dic/hbd/print.cgi?number=T6394

Millenarianism: "Defining the Opposition: Terrorism, Fundamentalism, Radicalism or Millenarianism? August 7, 2006, http://zoon.wordpress.com
"Israeli West Bank barrier," http://en.wikipedia.org/w/index.php?title=Israeli_West_Bank_barrier&printable=yes Edmund Sanders, "Israel begins rerouting West Bank barrier," *Los Angeles Times*, Feb. 12, 2010, www.latimes.com/news/nation-and-world/la-fg-israel-barrier12-2010feb12,0,378279...
"Mexico-United States barrier," http://en.wikipedia.org/w/index.php?title=Mexico_%E2%80%93_United_States_barier&pr...
Melissa del Bosque, "Against the Wall," *Texas Observer*, June 27, 2008, www.texasobserver.org/article.php?aid=2796&print=true
"Survey: Support for terror suspect torture differs among the faithful," www.cnn.com/2009/US/04/30/religion.torture/index.html; **But wording of the question may have elicited greater support of torture by all respondents. The question was: "Do you think the use of torture against suspected terrorists *in order to gain important information* can often be justified, sometimes be justified, rarely be justified, or never be justified?" The wording I have italicized implies that the torturer is likely to gain important information, although many experts consider that is unlikely to happen.**
"New Taboos," *Ecologist*, April, 2008
Bronowski, 1973, http://ejse.southwestern.edu/original%20site/manuscripts/v3n1/articles/art02_campbell/campbell.html
Mark Ames, "Ayn Rand, Hugely Popular Author and Inspiration to Right-Wing Leaders, Was a Big Admirer of Serial Killer," Feb. 27, 2010, www.alternet.org/module/printversion/145819
Bettina Lehovec, "I in You, You in Me," *Northwest Arkansas Times*, Feb. 27, 2010

Chapter 19: Hello, Future
"Bad Predictions," www.rinkworks.com/said/predictions.shtml
"Top 87 Bad Predictions about the Future," www.2spare.com/item_50221.aspx
Wild cards and weak signals: *Futurist,* July/Augus 2011
Projected Cost of Iraq War: Budget Director Mitch Daniels [Forbes 4/11/03, W. Post 3/28/03, NY Times 1/2/03
2012 facts are in controversy: *Nature* **says the last such alignment was 3 million years ago and the next will not be for 20-30 million years. Other experts say that the Mayan calendar does not actually end in 2012.**
Ned Potter, "Mayan Calendar Predicts Doomsday in 2012. Or Not." http://gma.yahoo.com/mayan-calendar-predicts-doomsday-2012-not-170613297.html
Millenarian angst, sensational media, scientific knowledge, and actual disasters have produced scares from comets to supervolcanoes and earthquakes. But the more likely catastrophes are within our own abilities to prevent.
http://news.yahoo.com/german-volcano-could-devastate-europe-211000098.html
A definition of science fiction from *Brave New Words*, **ed. Jeff Prucher: "A genre in which the setting differs from our own world (e.g. by the invention of new technology, through contact with aliens, by having a different history, etc.) and in which the difference is based on extrapolations made from one or more changes or suppositions; hence, such a genre in which the difference is explained (explicitly or implicitly) in scientific or rational, as opposed to supernatural terms."**

Chapter 20: Is Green Religion on the Way?
"Nontheistic religions," http://en.wikipedia.org/wiki/Nontheistic_religions
Definitions of religion:
http://www.qcc.cuny.edu/socialsciences/ppecorino/phil_of_religion_text/CHAPTER_10_DEFINITION/The-Definition-of-Religion.htm; http://en.wikipedia.org/wiki/Religion; http://dictionary.reference.com/browse/religion
T. Jeremy Gunn, "The Complexity of Religion and the Definition of "Religion" in International Law," *Harvard Human Rights Journal*, http://www.law.harvard.edu/students/orgs/hrj/iss16/gunn.shtml#Heading56
Bron Taylor, "A Green Future for Religion?" www.clas.ufl.edu/users/bron/bron/Taylor--GreenFuture4Rel.pdf
Besides *Religions of the World and Ecology*, **Tucker also published her own book,** *Worldly Wonder: Religions Enter Their Ecological Phase*. **Other scholars in this field are Max Oelschlaeger, who promoted a greener Christianity in** *Caring for Creation: An Ecumenical Approach to the Environmental Crisis*; **and J. Baird Callicott, who wrote** *Earth's Insights: a Survey of Ecological Ethics from the Mediterranean Basin to the Australian Outback.*
Patriarch Bartholomew: Brian Murphy, "Green Gospel," AP, August 15, 2006
John L. Allen, Jr., "The 'greening' of institutional Christianity," *National Catholic Reporter*, http://ncrcafe.org/node/767/print
Brian Kaylor, "Southern Baptist Leaders Release Environmental Statement," www.ethicsdaily.com/print_popup.cfm?AID=10196
Richard Land: Brian Kaylor, "Baptist Leader Misstates Environmental Data," 12-04-08, www.ethicsdaily.com/print_popup.cfm?AID=11408
Albert Mohler: Bob Allen, "Southern Baptist Leader Attacks Gore, Says Christians Should Save Souls, Not the Earth," 10-15-07, www.ethicsdaily.com/print_popup.cfm?AID=9570
Doug Casey, "Green religion as science," www.worldnetdaily.com/news/article.asp?ARTICLE_ID=24175 **Attempts to show that**
environmentalism is a religion.
UN plot: Author not listed, "The Rise of Global Green Religion," Environmental Conservation Organization, 1996, www.mikenew.com/ggreligion.html

"Avatar," www.earth-learning.org/.../Day%201,%20AM%20-%202.%20Percep... **Compares five contrasting world views of characters in "Avatar"**

Bruce Charlton, "Alienation, Neo-shamanism and Recovered Animism," 2002, http://www.hedweb.com/bgcharlton/animism.html

"Animism," http://en.wikipedia.org/wiki/Animism

Graham Harvey, "Animism: Respecting the Living World," http://www.animism.org.uk/

Major world religions by approximate numbers are Christianity (2.1 billion), Islam (1.5 billion), Secular (1.1 billion), Hinduism (900 million), Chinese Traditional (400 million), Folk Religions (400 million), Buddhism (400 million)

http://www.adherents.com/Religions_By_Adherents.html; http://en.wikipedia.org/wiki/Major_religious_groups

"New Age," http://en.wikipedia.org/wiki/New_Age

Religious Tolerance, "New Age Spirituality," http://www.religioustolerance.org/newage.htm

Pew Forum, "Many Americans Mix Multiple Faiths," http://pewforum.org/Other-Beliefs-and-Practices/Many-Americans-Mix-Multiple-Faiths.aspx

It is hard to define U.S. religious denominations, which are in flux. By most accounts, Catholics are the largest at 25% with New Age second at 20% or more, unaffiliated 3rd at 16% (there may be some overlap with New Age), lapsed Catholics 4th at 10%, and Southern Baptist Convention 5th at about 6% (membership has been declining)

"Oceanic feeling,´ http://en.wikipedia.org/wiki/Oceanic_feeling

Stanford Encyclopedia of Philosophy, "Mysticism," http://plato.stanford.edu/entries/mysticism/

Chris Ott, personal communication

Michael P. Garafalo, "Nature Mysticism Quotes," www.gardendigest.com/mystl.htm

Larry Gates, "Nature Mysticism," 1998,

Gorazd Andrejo, "Nature Mysticism, the Christian Way," http://libprot.blogspot.com/2010/07/nature-mysticism-christian-way.html

http://hummingbirdworld.com/spiritnature/nature_mysticism.htm

Mike King, "Nature Mysticism in the writings of Traherne, Whitman, Jefferies and Krishnamurti," http://web.ukonline.co.uk/mr.king/writings/essays/essaysukc/natmysta.html

Chris Johnstone, "What Is Deep Ecology?" http://www.rainforestinfo.org.au/deep-eco/johnston.htm, March 8, 2002

The Encyclopedia of Earth, "Deep Ecology," http://www.eoearth.org/article/Deep_ecology, Oct. 12, 2006

"Buddhism and Science," http://en.wikipedia.org/w/index.php?title=Buddhism_and_science&printable=yes

Bradley Steffens, *Ibn al-Haytham: First Scientist*

"Alhazen" http://en.wikipedia.org/wiki/Alhazen

Baha'i: "Relationship between religion and science," http://en.wikipedia.org/w/indesx.php?title=Relationship_between_religion_and_science&pr...

Chet Raymo, "The Music of What Happens," www.up.edu/portlandmag/2006_fall/music/music3.htm

Christopher Ott, "On Science and Spirituality," www.meherbabadnyana.net/article_science.html

"Interpretation of quantum mechanics," http://en.wikipedia.org/wiki/Interpretation_of_quantum_mechanics

"Many-worlds interpretation," http://en.wikipedia.org/wiki/Many-worlds_interpretation

Eddington quotes:
http://www.quotationspage.com/quote/27537.html; www.quotationspage.com/quote/27288.html

Onodea Judith, "Teilhard de Chardin," www.gaiamind.com/Teilhard.htm

Thomas Berry, "Twelve Principles for Understanding the Universe and the Role of the Human in the Universe Process," http://www.astepback.com/12principles.htm

Thomas Berry, *The Great Work: Our Way into the Future*, Bell Tower/Random House, 1999

Rich Heffern, "Thomas Berry," www.natcath.com/NCR_online/archives/081001a.htm

Stephanie Kaza, "Thomas Berry," www.thomasberry.org/Essays/AwakeningToOurRoleInTheGreatWork.html

Derrick Jensen interview with Thomas Berry, "Singing to the Dawn," *The Sun*, May, 2002

"Brian Swimme, Biography and resources," EnlightenNext magazine, www.enlightennext.org/magazine/bios/brian-swimme.asp

"Brian Swimme," http://en.wikipedia.org/w/index.php?title=Brian_Swimme&printable=yes

"The Evolutionary Evangelist," http://thankgodforevolution.com/node/1134

"Religious Naturalist Perspectives," www.religiousnaturalism.org/Perspectives_on_Religious_Naturalism.html

"Religious naturalism," http://en.wikipedia.org/w/index.php?title=Religious_naturalism&printable=yes

Jill Nelmark, interview with Ursula Goodenough, "There are Two Flavors of God People," *Science and Spirit* magazine, www.beliefnet.com/News/Science-Religion/2004/06/There-Are-Two-Flavors-Of-God-People.aspx?print=true

Chapter 21: Paradigms Old and Newer

Joseph Goldstein, "Triumph of the Heart," *Tricycle* magazine, Spring 2008

Appendix One: Preamble to the Universal Declaration of Human Rights

*The following is the **Preamble** (followed by the articles) of the Universal Declaration of Human Rights which was Adopted and proclaimed by United Nations General Assembly Resolution 217 A (III) on 10 December 1948*:

Whereas recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world.

Whereas disregard and contempt for human rights have resulted in barbarous acts which have outraged the conscience of mankind, and the advent of a world in which human beings shall enjoy freedom of speech and belief and freedom from fear and want has been proclaimed as the highest aspiration of the common people,

Whereas it is essential, if man is not to be compelled to have recourse, as a last resort, to rebellion against tyranny and oppression, that human rights should be protected by the rule of law,

Whereas it is essential to promote the development of friendly relations between nations,

Whereas the peoples of the United Nations have in the Charter reaffirmed their faith in fundamental human rights, in the dignity and worth of the human person and in the equal rights of men and women and have determined to promote social progress and better standards of life in larger freedom,

Whereas Member States have pledged themselves to achieve, in co-operation with the United Nations, the promotion of universal respect for and observance of human rights and fundamental freedoms,

Whereas a common understanding of these rights and freedoms is of the greatest importance for the full realization of this pledge,

Now, Therefore THE GENERAL ASSEMBLY proclaims THIS UNIVERSAL DECLARATION OF HUMAN RIGHTS as a common standard of achievement for all peoples and all nations, to the end that every individual and every organ of society, keeping this Declaration constantly in mind, shall strive by teaching and education to promote respect for these rights and freedoms and by progressive measures, national and international, to secure their universal and effective recognition and observance, both among the peoples of Member States themselves and among the peoples of territories under their jurisdiction.

Article 1. All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.

Article 2. Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.

Article 3. Everyone has the right to life, liberty and security of person.

Article 4. No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.

Article 5. No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.

Article 6. Everyone has the right to recognition everywhere as a person before the law.

Article 7. All are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination.

Article 8. Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.

Article 9. No one shall be subjected to arbitrary arrest, detention or exile.

Article 10. Everyone is entitled in full equality to a fair and public hearing by an independent and impartial tribunal, in the determination of his rights and obligations and of any criminal charge against him.

Article 11.

(1) Everyone charged with a penal offence has the right to be presumed innocent until proved guilty according to law in a public trial at which he has had all the guarantees necessary for his defence.

(2) No one shall be held guilty of any penal offence on account of any act or omission which did not constitute a penal offence, under national or international law, at the time when it was committed. Nor shall a heavier penalty be imposed than the one that was applicable at the time the penal offence was committed.

Article 12. No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.

Article 13.

(1) Everyone has the right to freedom of movement and residence within the borders of each state.

(2) Everyone has the right to leave any country, including his own, and to return to his country.

Article 14.

(1) Everyone has the right to seek and to enjoy in other countries asylum from persecution.

(2) This right may not be invoked in the case of prosecutions genuinely arising from non-political crimes or from acts contrary to the purposes and principles of the United Nations.

Article 15.

(1) Everyone has the right to a nationality.

(2) No one shall be arbitrarily deprived of his nationality nor denied the right to change his nationality.

Article 16.

(1) Men and women of full age, without any limitation due to race, nationality or religion, have the right to marry and to found a family. They are entitled to equal rights as to marriage, during marriage and at its dissolution.

(2) Marriage shall be entered into only with the free and full consent of the intending spouses.

(3) The family is the natural and fundamental group unit of society and is entitled to protection by society and the State.

Article 17.

(1) Everyone has the right to own property alone as well as in association with others.

(2) No one shall be arbitrarily deprived of his property.

Article 18. Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.

Article 19. Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.

Article 20.

(1) Everyone has the right to freedom of peaceful assembly and association.

(2) No one may be compelled to belong to an association.

Article 21.

(1) Everyone has the right to take part in the government of his country, directly or through freely chosen representatives.

(2) Everyone has the right of equal access to public service in his country.

(3) The will of the people shall be the basis of the authority of government; this will shall be expressed in periodic and genuine elections which shall be by universal and equal suffrage and shall be held by secret vote or by equivalent free voting procedures.

Article 22. Everyone, as a member of society, has the right to social security and is entitled to realization, through national effort and international co-operation and in accordance with the organization and resources of each State, of the economic, social and cultural rights indispensable for his dignity and the free development of his personality.

Article 23.

(1) Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment.

(2) Everyone, without any discrimination, has the right to equal pay for equal work.

(3) Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.

(4) Everyone has the right to form and to join trade unions for the protection of his interests.

Article 24. Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay.

Article 25.

(1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing, and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

(2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.

Article 26.

(1) Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.

(2) Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.

(3) Parents have a prior right to choose the kind of education that shall be given to their children.

Article 27.

(1) Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.

(2) Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.

Article 28. Everyone is entitled to a social and international order in which the rights and freedoms set forth in this Declaration can be fully realized.

Article 29.

(1) Everyone has duties to the community in which alone the free and full development of his personality is possible.

(2) In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are determined by law solely for the purpose of securing due recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order and the general welfare in a democratic society.

(3) These rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations.

Article 30. Nothing in this Declaration may be interpreted as implying for any State, group or person any right to engage in any activity or to perform any act aimed at the destruction of any of the rights and freedoms set forth herein.

Appendix Two: THE SEVILLE STATEMENT, 1986

INTRODUCTION

Believing that it is our responsibility to address from our particular disciplines the most dangerous and destructive activities of our species, violence and war; recognising that science is a human cultural product which cannot be definitive or all encompassing; and gratefully acknowledging the support of the authorities of Seville and representatives of the Spanish UNESCO, we, the undersigned scholars from around the world and from relevant sciences, have met and arrived at the following Statement on Violence. In it, we challenge a number of alleged biological findings that have been used, even by some in our disciplines, to justify violence and war. Because the alleged findings have contributed to an atmosphere of pessimism in our time, we submit that the open, considered rejection of these misstatements can contribute significantly to the International Year of Peace.

Misuse of scientific theories and data to justify violence and war is not new but has been made since the advent of modern science. For example, the theory of evolution has been used to justify not only war, but also genocide, colonialism, and suppression of the weak. We state our position in the form of five propositions. We are aware that there are many other issues about violence and war that could be fruitfully addressed from the standpoint of our disciplines, but we restrict ourselves here to what we consider a most important first step.

FIRST PROPOSITION

IT IS SCIENTIFICALLY INCORRECT to say that we have inherited a tendency to make war from our animal ancestors. Although fighting occurs widely throughout animal species, only a few cases of destructive intraspecies fighting between organised groups have ever been reported among naturally living species, and none of these involve the use of tools designed to be weapons. Normal predatory feeding upon other species cannot be equated with intraspecies violence. Warfare is a peculiarly human phenomenon and does not occur in other animals. The fact that warfare has changed so radically over time indicates that it is a product of culture. Its biological connection is primarily through language which makes possible the co-ordination of groups, the transmission of technology, and the use of tools. War is biologically possible, but it is not inevitable, as evidenced by its variation in occurrence and nature over time and space. There are cultures which have not engaged in war for centuries, and there are cultures which have engaged in war frequently at some times and not at others.

This information is provided by UNESCO Culture of Peace Programme
7, Place de Fontenoy 75352 PARIS 07 SP FRANCE

SECOND PROPOSITION

IT IS SCIENTIFICALLY INCORRECT to say that war or any other violent behaviour is genetically programmed into our human nature. While genes are involved at all levels of nervous system function, they provide a developmental potential that can be actualised only in conjunction with the ecological and social environment. While individuals vary in their predispositions to be affected by their experience, it is the interaction between their genetic endowment and conditions of nurturance that determines their personalities. Except for rare pathologies, the genes do not produce individuals necessarily predisposed to violence. Neither do they determine the opposite. While genes are co-involved in establishing our behavioural capacities, they do not by themselves specify the outcome.

THIRD PROPOSITION

IT IS SCIENTIFICALLY INCORRECT to say that in the course of human evolution there has been a selection for aggressive behaviour more than for other kinds of behaviour. In all well studied species, status within the group is achieved by the ability to co-operate and to fulfil social functions relevant to the structure of that group. 'Dominance' involves social bondings and affiliations; it is not simply a matter of the possession and use of superior physical power, although it does involve aggressive behaviours. Where genetic selection for aggressive behaviour has been artificially instituted in animals, it has rapidly succeeded in producing hyper- aggressive individuals; this indicates that aggression was not maximally selected under natural conditions. When such experimentally-created hyperaggressive animals are present in a social group, they either disrupt its social structure or are driven out. Violence is neither in our evolutionary legacy nor in our genes.

FOURTH PROPOSITION

IT IS SCIENTIFICALLY INCORRECT to say that humans have a 'violent brain.' While we do have the neural apparatus to act violently, it is not automatically activated by internal or external stimuli. Like higher primates and unlike other animals, our higher neural processes filter such stimuli before they can be acted upon. How we act is shaped by how we have been conditioned and socialised. There is nothing in our neurophysiology that compels us to react violently.

FIFTH PROPOSITION

IT IS SCIENTIFICALLY INCORRECT to say that war is caused by 'instinct' or any single motivation. The emergence of modern warfare has been a journey from the primacy of emotional and motivational factors, sometimes called 'instincts,' to the primacy of cognitive factors. Modern war involves institutional use of personal characteristics such as obedience, suggestibility, and idealism, social skills such as language, and rational considerations such as cost-calculation, planning, and information processing. The technology of modern war has exaggerated traits associated with violence both in the training of actual combatants and in the preparation of support for war in the general population. As a result of this exaggeration, such traits are often mistaken to be the causes rather than the consequences of the process.

CONCLUSION

We conclude that biology does not condemn humanity to war, and that humanity can be freed from the bondage of biological pessimism and empowered with confidence to undertake the transformative tasks needed in this International Year of Peace and in the years to come. Although these tasks are mainly institutional and collective, they also rest upon the consciousness of individual participants for whom pessimism and optimism are crucial factors. Just as 'wars begin in the minds of men', peace also begins in our minds. The same species who invented war is capable of inventing peace. The responsibility lies with each of us.

David Adams, Psychology, Wesleyan University, Middletown, Connecticut, U.S.A.
 S.A. Barnett, Ethology, The Australian National University, Canberra, Australia
N.P. Bechtereva, Neurophysiology, Institute for Experimental Medicine of the Academy of Medical Sciences of the U.S.S.R., Leningrad, U.S.S.R.
Bonnie Frank Carter, Psychology, Albert Einstein Medical Center, Philadelphia, U.S.A.
José M. Rodriguez Delgado, Neurophysiology, Centro de Estudios Neurobiológicos, Madrid, Spain
José Luis Díaz, Ethology, Instituto Mexicano de Psiquiatría, México D.F., Mexico
Andrzej Eliasz, Individual Differences Psychology, Polish Academy of Sciences, Warsaw, Poland
Santiago Genovés, Biological Anthropology, Instituto de Estudios Antropológicos, México D.F., Mexico
Benson E. Ginsburg, Behavior Genetics, University of Connecticut, Storrs, Connecticut, U.S.A.
Jo Groebel, Social Psychology, Erziehungswissenschaftliche Hochschule, Landau, Federal Republic of Germany
Samir-Kumar Ghosh, Sociology, Indian Institute of Human Sciences, Calcutta, India
Robert Hinde, Animal Behaviour, Cambridge University, Cambridge, U.K.
Richard E. Leakey, Physical Anthropology, National Museums of Kenya, Nairobi, Kenya
Taha H. Malasi, Psychiatry, Kuwait University, Kuwait
J. Martín Ramírez, Psychobiology, Universidad de Sevilla, Spain
Federico Mayor Zaragoza, Biochemistry, Universidad Autónoma, Madrid, Spain
Diana L. Mendoza, Ethology, Universidad de Sevilla, Spain
Ashis Nandy, Political Psychology, Centre for the Study of Developing Societies, Delhi, India
John Paul Scott (geneticist), Animal Behaviour, Bowling Green State University, Bowling Green, Ohio, U.S.A.
Riitta Wahlstrom, Psychology, University of Jyväskylä, Finland

Acknowledgements

Other books in this series:

MODELS, MYTHS AND MUDDLES

SWIMMING IN A SEA OF IDEOLOGY

Other books by this author:

THE YOUTOPIA GAME, a novel

THE FIRST BOOK OF SHORT VERSE
LYRIC POEMS
WHAT DO YOU WANT TO KNOW

(These three books for children were published under the name Coralie Howard.)