# Timeline


## Email Edition

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**http://www.globalcommunity.org**

**timeline@globalcommunity.org**

**Phone: (650) 328 7756  Fax: (650) 328 7785**


***In this Issue:***



## Global Agribusiness: Blessing or Curse

**By Mac Lawrence**

The globalization of agriculture is in high gear. In rich countries, we get to eat peaches in December and grapes in January no matter where we live. But at what cost to the people who live in the country where the food is produced, to the small farmers, to the workers in the field, to the land it is produced on, even to the quality of the food itself? Is what we're doing right, and is it sustainable?

One of the most vocal critics of the Green Revolution and agribusinesses in general is Vandana Shiva, a physicist-activist from India. In her presentation at the prestigious Reith lecture in the United Kingdom, titled "Globalization and Poverty: Economic Globalization Has Become a War Against Nature and the Poor," Shiva said that agribusiness poses problems everywhere in the world, and is a disaster for poorer countries.

By any measure, the Green Revolution is one of the most significant events of the 20th century. It has helped double global food production in little more than a generation. The Revolution started with a dwarf wheat strain brought to the U.S. in the late 1940s. Through further breeding, the strain led to a low-growing plant whose leaves shaded out most weeds. Now some 80 percent of all wheat grown in developing countries is planted to semi-dwarf varieties, which has led, say supporters, to "four decades of extraordinary growth in yields," saving thousands from starvation.

Fred Pearce, writing in New Scientist, is more cautious: "The high-tech green revolution was always designed for big merchandised farms on the best land, using capital to buy pesticides and fertilizers the new high-yielding plant varieties need. It was never a blueprint for working the poorer land, or helping illiterate farmers with plenty of labor and ingenuity but little capital."

Vandana Shiva sees the new agriculture as causing far more problems than it has solved, noting that globalization has forced farmers all over the world into green revolution hybrids, and now into genetically engineered (GE) crops, with particularly severe consequences in countries like India.

"Recently, I was visiting Bhatinda in Punjab because of an epidemic of farmers' suicides. Punjab used to be the most prosperous agricultural region in India. Today every farmer is in debt and despair. Vast stretches of land have become water-logged desert. And, as an old farmer pointed out, even the trees have stopped bearing fruit because heavy use of pesticides has killed the pollinators—the bees and butterflies.

"And Punjab is not alone in experiencing this ecological and social disaster. Last year I was in Warangal, Andhra Pradesh, where farmers have also been committing suicide. Farmers who traditionally grew pulses and millets and paddy have been lured by seed companies to buy hybrid cotton seeds referred to as 'white gold,' which were supposed to make them millionaires. Instead they became paupers.

"Their native seeds have been displaced with new hybrids which cannot be saved and need to be purchased every year at a high cost. Hybrids are also very vulnerable to pest attacks. Spending on pesticides in Warangal has increased 2,000 percent from $2.5 million in the 1980s to $150 million in 1997. Now farmers are consuming the same pesticides as a way of killing themselves so that they can escape permanently from unpayable debt.

“25-year-old Betavati Ratan took his life because he could not pay back debts for drilling a deep tube well on his two-acre farm. The wells are now dry, as are the wells in Gujarat and Rajasthan where more than 50 million people face a water famine.

“The drought is not a natural disaster. It is man-made. It is the result of mining scarce ground water to grow thirsty cash crops for export instead of water-prudent food crops for local needs.

Shiva disputes the claim that the Green Revolution has benefited agriculture in poor countries. “It is women and small-scale farmers working with biodiversity who are the primary food providers in the Third World and…their biodiversity-based small farm systems are more productive than industrial monocultures….With the destruction of diversity, rich sources of nutrition disappear.

“The so-called ‘high yields’ of industrial agriculture do not imply more production of food and nutrition. Yield usually refers to production per unit area of a single crop. This hides the production by millions of women farmers in the Third World—farmers like those in my native Himalaya who…in their terraced fields grow Jhangora (barnyard millet), Marsha (amaranth), Tur (pigeon pea), Urad (black gram), Gahat (horse gram), soy bean (glycine max), Bhat (glycine soya), Rayans (rice bean), Swanta (cow pea), Koda (finger millet).

“Mayan peasants in the Chiapas are characterized as unproductive because they produce only two tons of corn per acre. However, the overall food output is 20 tons per acre when the diversity of their beans and squashes, their vegetables and fruit trees is taken into account.

“In Java, small farmers cultivate 607 species in their home gardens. In sub-Saharan Africa, women cultivate as many as 120 different plants in the spaces left alongside the cash crops, and this is the main source of household food security. A single home garden in Thailand has more than 230 species, and African home gardens have more than 60 species of trees. Rural families in the Congo eat leaves from more than 50 different species of tree.

“A study in eastern Nigeria found that home gardens occupying only 2 percent of a household’s farmland accounted for half the farm’s total output. Similarly, home gardens in Indonesia are estimated to provide more than 20 percent of household income and 40 percent of domestic food supplies.”

## Genetic Engineering

Those who develop them, and many others, think genetically engineered crops have a bright future in tomorrow’s agriculture. One who agrees is Swiss scientist Ingo Potrykus, who believes the "golden rice" he genetically engineered to contain vitamin A will help the 124 million children the World Health Organization estimates live almost exclusively

on rice, and who do not get enough vitamin A. Currently, as a result of that deficiency, a million or more children die each year and another half million go blind. Working with the Rockefeller Foundation, Potrykus sees his golden rice as playing an important role in dealing with the problem, and plans to offer the seed free to farmers earning less than $10,000 a year. He remains dedicated despite protestors shouting him down in lectures, and has built a grenade-proof greenhouse to protect his plants from potential vandalism.

Vandana Shiva is less than enthusiastic about the idea of a golden rice: “It is assumed that without genetic engineering we cannot remove vitamin A deficiency. However, nature gives us abundant and diverse sources of vitamin A. If rice were not polished, rice itself would provide vitamin A. If herbicides were not sprayed on our wheat fields, we would have bathua, amaranth, mustard leaves as delicious and nutritious greens.”

## Processing, Packaging, & Patents

“Ninety-nine percent of the food in India,” notes Shiva, “is processed by women at household level, or by small cottage industry. Now, under the pressure of globalization, things are changing. In August 1998, small-scale local processing of edible oil was banned in India through a ‘packaging order’ which made sale of open oil illegal and required all oil to be packed in plastic or aluminum. This shut down tiny ‘ghanis,’ or cold-pressed mills. It destroyed the market for our diverse oilseeds—mustard, linseed, sesame, groundnut, and coconut.

“The takeover of the edible oil industry has affected 10 million livelihoods. The takeover of ‘atta,’ or flour, by packaged branded flour will cost 100 million livelihoods. These millions are being pushed into new poverty.

“Patents and intellectual property rights are supposed to be granted for novel inventions. But patents are being claimed for rice varieties such as the basmati for which the Doon Valley—where I was born—is famous, or pesticides derived from the neem which our mothers and grandmothers have been using. Rice Tec, a U.S.-based company, has been granted Patent No. 5,663,484 for basmati rice lines and grains.

“Basmati, neem, pepper, bitter gourd, turmeric—every aspect of the innovation embodied in our indigenous food and medicinal systems is now being pirated and patented. The knowledge of the poor is being converted into the property of global corporations, creating a situation where the poor will have to pay for the seeds and medicines they have evolved and have used to meet their needs for nutrition and health care.”

## Toward Sustainability

The New Scientist article mentioned earlier begins with an attention-grabbing statement: “Across East Africa, thousands of farmers are planting weeds in their maize fields.” The author explains: “As bizarre as it sounds, their technique is actually raising yields by giving the insect pests something else to chew on besides maize.” In most years a third of

the region's maize is lost to the stem borer. But a local researcher named Ziadin Khan discovered that the borer is even fonder of a local weed, napier grass. By planting napier grass in their fields, farmers can lure the stem borers away from the maize—and into a deadly sticky substance the grass naturally makes. The technique has raised farm yields in the area by 60 to 70 percent. As Khan notes, "It's better than pesticides, and a whole lot cheaper."

The article also discusses the largest study of sustainable agriculture to date, published this January, which found that worldwide more than four million farms were involved in using sustainable agriculture techniques. These farms, covering three percent of fields in the Third World—an area the size of Italy—have shown average yield increases of 73 percent.

Miguel Altieri of the University of California at Berkeley, quoted in the article, echoes a theme of Vandana Shiva's, stating that the success of sustainable agriculture "dispells the myth that modern techno-farming is the most productive method. In Mexico," he says, "it takes 1.73 hectares of land planted with maize to produce as much food as one hectare planted with a mixture of maize, squash, and beans." The difference comes from "the reduction of losses due to weeds, insects, and diseases and a more efficient use of the available resources of water, light, and nutrients....Monocultures breed pests and waste resources."

A major impetus toward sustainable agriculture is the growing market for organic produce, which is increasing in America and Europe by 20 to 30 percent a year, even with a price premium. A recent article in Nature notes: "In comparison with conventional methods, 'organic' alternatives can improve soil fertility and have fewer detrimental effects on the environment. These alternatives can also produce equivalent crop yields to conventional methods."

There are obviously more factors involved in feeding the world than just growing more food, or even going organic. As Donella Meadows wrote in a column which appeared in Timeline: "We already grow enough food to nourish everyone. If just one-third of the grain fed to animals went to humans instead, we would not have 24,000 deaths per day due to hunger. Or if 40 percent post-harvest loss rates in poor countries were reduced. Or if we shared the embarrassing crop surpluses of North America and Europe. Or if we created an economy where everyone had money to buy food or land to grow it—which would solve a lot of other problems, too."

## Nonviolent Communication
### By Sandra Mardigian

*Nonviolent Communication: A Language of Compassion* is an effective and enlightening crash-course in personal communications. Author Marshall Rosenberg trains individuals and organizations in Nonviolent Communication in the U.S. and internationally. A practicing clinical psychologist for 40 years, he says he has been studying two questions

ever since the summer of 1943 when a race war that killed 40 people took place in his Detroit neighborhood: What happens to disconnect us from our compassionate nature, leading us to behave violently and exploitatively? And, conversely, what allows some people to stay connected to their compassionate nature even under the most trying circumstances?

Through decades of study and development, Rosenberg has designed a specific approach to "compassionate communication" that has made him a sought-after presenter around the globe. He calls his approach NVC, for Nonviolent Communication, and it provides a guide for reframing how one responds to situations of potential conflict with compassion, clarity, and honesty by replacing old patterns of defending, withdrawing, or attacking.

A few examples of the skills developed in NVC:

• Noticing how we ourselves, and also those with whom we hope to communicate, frequently confuse what we actually observe happening with our interpretation of it. (Observation: Johnny hits Susie. Interpretation: Johnny is a bully.)

• Understanding the difference between expressed feelings, such as "I feel sad" or "I feel scared," and feeling-interpretation, such as "I feel betrayed" or "I feel rejected." ("I feel betrayed" or "I feel rejected" implies blame.)

• Understanding that to comprehend deeply another's communication does not mean having to agree, or do what they want, or that they are right and we are wrong.

• Knowing how to identify the deeper needs, desires, or longings that underlie our own distress, confusion, complaints, and blaming, so that we can clearly communicate what we actually want.

• Knowing how to hear the underlying values, needs, and desires of another person even if they are attacking or blaming us, in order to address these rather than the attack.

Workshop participants from many walks of life, and from places as varied as Ruanda, Russia, and Cleveland, Ohio, attest to the effectiveness of NVC. The comment by Nada Ignjatovic-Savic, a university professor in Belgrade, Yugoslavia, is typical: "An NVC educational project has taught 13,000 children from 5 to 16 years old how to resolve misunderstandings and conflicts in a nonviolent way. All participants in the project, young as well as old, say that learning Nonviolent Communication has enriched our lives."

**Nonviolent Communication: A Language of Compassion**
by Marshall B. Rosenberg, Ph.D.
PuddleDancer Press, Del Mar, California. $15.95

This and other materials are available from the Center for Nonviolent Communication
P.O. Box 2662, Sherman, TX 75091
1-800-255-7696
www.cnvc.org

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*In the last issue of Timeline, we ran a memorial tribute to Donella Meadows, whose columns have graced every issue of Timeline since our first. The last column she wrote before her death summed up everything she gave her life to. We reprint it here.*

# Economic Laws Clash with the Planet's
## By Donella Meadows

The first commandment of economics is: Grow. Grow forever. Companies must get bigger. National economies need to swell by a certain percent each year. People should want more, make more, earn more, spend more—ever more.

The first commandment of the Earth is: Enough. Just so much and no more. Just so much soil. Just so much water. Just so much sunshine. Everything born of the Earth grows to its appropriate size and then stops. The planet does not get bigger, it gets better. Its creatures learn, mature, diversify, evolve, create amazing beauty and novelty and complexity, but live within absolute limits.

Now, when there's an inconsistency between human economics and the laws of planet Earth, which do you think is going to win?

Economics says: Compete. Only by pitting yourself against a worthy opponent will you perform efficiently. The reward for successful competition will be growth. You will eat up your opponents, one by one, and as you do, you will gain the resources to do it some more.

The Earth says: Compete, yes, but keep your competition in bounds. Don't annihilate. Take only what you need. Leave your competitor enough to live. Wherever possible, don't compete, cooperate. Pollinate each other, create shelter for each other, build firm structures that lift smaller species up to the light. Pass around the nutrients, share the territory. Some kinds of excellence rise out of competition; other kinds rise out of cooperation. You're not in a war, you're in a community.

Which of those mandates makes a world worth living in?

Economics says: Use it up fast. Don't bother with repair; the sooner something wears out, the sooner you'll buy another. That makes the gross national product go round. Throw things out when you get tired of them. Throw them to a place where they become useless. Grab materials and energy to make more. Shave the forests every 30 years. Get the oil out of the ground and burn it now. Make jobs so people can earn money, so they can buy more stuff and throw it out.

The Earth says: What's the hurry? Take your time building soils, forests, coral reefs, mountains. Take centuries or millennia. When any part wears out, don't discard it, turn it into food for something else. If it takes hundreds of years to grow a forest, millions of years to compress oil, maybe that's the rate at which they ought to be used.

Economics discounts the future. Ten years from now, $2 will be worth $1. You could invest that dollar at 7 percent and double it in ten years. So a resource 10 years from now is worth only half what it's worth now. Take it now. Turn it into dollars.

The Earth says: Nonsense. Those invested dollars grow in value only if something worth buying grows, too. The Earth and its treasures will not double in 10 years. What will you spend your doubled dollars on if there is less soil, dirtier water, fewer creatures, less beauty? The Earth's rule is: Give to the future. Lay up a fraction of an inch of topsoil each year. Give your all to nurture the young. Never take more in your generation than you give back to the next.

The economic rule is: Do whatever makes sense in monetary terms.

The Earth says money measures nothing more than the relative power of some humans over other humans, and that power is puny, compared with the power of the climate, the oceans, the uncounted multitudes of one-celled organisms that created the atmosphere, that recycle the waste, that have lasted for 3 billion years. The fact that the economy, which has lasted maybe 200 years, puts zero value on these things means only that the economy knows nothing about value—or about lasting.

Economics says: Worry, struggle, be dissatisfied. The permanent condition of humankind is scarcity. The only way out of scarcity is to accumulate and hoard, though that means, regrettably, that others will have less. Too bad, but there is not enough to go around.

The Earth says: Rejoice! You have been born into a world of self-maintaining abundance and incredible beauty. Feel it, taste it, be amazed by it. If you stop your struggle and lift your eyes long enough to see Earth's wonders, to play and dance with the glories around you, you will discover what you really need. It isn't that much. There is enough. As long as you control your numbers, there will be enough for everyone and for as long as you can imagine.

We don't get to choose which laws, those of the economy or those of the Earth, will ultimately prevail. We can choose which ones we will personally live under—and whether to make our economic laws consistent with planetary ones, or to find out what happens if we don't.

# Are "Free Markets" Really Free?
## A Book Review by Joe Kresse

John Gray is a professor of European thought at the prestigious London School of Economics. He is a well-known conservative thinker, and was an influence on Margaret Thatcher. His writings were relied upon by the Conservatives in their efforts to bring about a free market economy in Great Britain during Thatcher's time in power.

But like Robert McNamara, who shocked America by reversing himself to criticize the Vietnam war, Gray has decided the conservative agenda is no longer viable. His book, *False Dawn*, is not an easy read, but makes a strong case against free market economics. This is important for Americans to consider, because the idea of free markets is assumed to be a desirable goal and almost never questioned. And with a Republican administration and Congress, we are likely to be hearing a lot about the benefits of free markets. Here are summaries of the key points Gray makes:

• The global free market is an American project, but it has no long-term winner. Indeed, if there is a major dislocation of world markets, the U.S. economy would be more exposed than many others.

• The free market is not a natural state of affairs which comes about when political interference with the market is removed. To the contrary, it takes the power of a centralized state to maintain a free market, thus invalidating the notion that a free market goes together with minimum government. Rather, regulated markets are the norm, because citizens insist on some curbs on markets so that they do not thwart vital human needs for stability and security.

• Democracy and capitalism are competitors rather than partners. " 'Democratic capitalism'—the vacuous rallying cry of neoconservatives everywhere—designates a deeply problematic relationship." Free markets are not accompanied by stable democratic government, but by "the volatile politics of economic insecurity."

• The insecurities of free market capitalism corrode some of the central institutions and values of a middle-class society. Chief among these is the idea of a career. Workers can no longer rely on a job in which professional seniority tracks the normal working life cycle, and this increases their economic insecurity. And this insecurity is being spread to countries that have had much stronger social contracts between employers and employees than we in the U.S. have ever had—countries such as Germany and Japan, for example.

• Socialism is not a viable alternative to capitalism, because the legacy of central planning has been so obviously ruinous. So in the future as far as we can foresee, there will only be varieties of capitalism.

• Western countries, especially the U.S., welcomed the demise of Marxian socialism, seeing it as a triumph for free market capitalism. But no formerly communist country has adopted *any* western model. In fact, Gray argues that Marxism was also a Western ideology, one based on modernization in which the model was the 19th century capitalist factory.

• Marxism-Leninism and free market economics both neglect the environment and have scant sympathy for the casualties of economic progress. They both also seek to "homogenize" the diverse cultures of the world into a single, universal civilization (think McDonald's and Coca Cola).

• The U.S. does not have the power to make a universal free market a reality, but it does have the power to veto reform of the world economy. So long as we remain wedded to free markets, no reform can take place. This will bring about the fragmenting of the world economy as imbalances become insupportable. Trade wars will make international cooperation more difficult. Regional blocs will arise to control scarce natural resources, which will make it more difficult to avert military conflicts.

Gray points out that there are many social problems in our country which are directly related to our form of free market capitalism (to name a few: the highest disparity between the rich and poor of any developed nation, high rates of crime and violence, loss of a sense of community, no time for family or recreation, lack of universal health care, and fewer and fewer people with pensions). These result from the economic power of the elites overriding the political power of the average citizen, thus removing the safeguards that exist in a regulated market.

Gray asserts that we in the U.S. must allow for various forms of capitalism to emerge and coexist throughout the world, each a reflection of the qualities of the culture in which it operates. This does not mean no globalization, but it does mean that in many instances some form of regulation—tariffs, environmental laws, etc.—may be necessary. However, he is not particularly hopeful about our willingness to let this happen.

He is equally pessimistic about the U.S. view of economic difficulties in other areas of the world, such as those experienced recently in Asia. We in the U.S. see these difficulties as showing the need for the universal spread of free markets. Instead, he says, economic difficulties in other areas may be "the prelude to a global deflationary crisis, in the course of which the United States itself recoils from the regime of free trade and deregulated markets it is currently seeking to impose in Asia and throughout the world."

Gray's lack of optimism may be justified, but the recent protests in Seattle against the WTO, and in Washington, D.C., against the IMF and World Bank, show we are becoming aware of the shortcomings of our current economic system. Perhaps we will be able to change course before there is a global economic meltdown.

**False Dawn: The Delusions of Global Capitalism**
by John Gray
New York Press, New York, NY, 1998. $25.00

# Alan AtKisson on Creating Sustainable Communities
## By Mac Lawrence

One of the bright lights of the sustainability movement is Alan AtKisson, former editor of *In Context* magazine, co-founder of Sustainable Seattle, head of the consulting firm AtKisson & Associates, and author of the new book, *Believing Cassandra: An Optimist Looks at a Pessimist's World*.

As the book explains, "Cassandra was the young and beautiful daughter of Priam, the last king of Troy. Apollo bestowed upon Cassandra a special gift—the ability to see the future. But when she refused his favors, he twisted her gift with a curse, so no one would believe her prophecies."

AtKisson observes that today concerned citizens and scientists see the world hurtling toward self-destruction. Meanwhile, he says, most of the human race either doesn't believe their dire predictions, as was the case with Cassandra, or adopts the pessimistic attitude that there isn't much anyone can do about it. AtKisson, on the other hand, chooses to be an optimist. Believe Cassandra, he advises, but stop the hand-wringing and get to work because, by choice or catastrophe, civilization will discover a sustainable way of life, and working for an enticing future is better than blundering into a catastrophe.

Only days after the death of Donella (Dana) Meadows, who was a mentor for AtKisson and with whom he worked closely for many years, he gave an address at the Foundation for Global Community's speaker series, dedicating it to Dana's memory. "Dana was for me the original Cassandra, who could warn of impending dangers but was unable to prevent them from happening. To be a Cassandra is a difficult thing because a prophet fundamentally does not want to be right; they want to be proven wrong. That's why they issue a warning."

Meadows' first warning came in the form of a book, *The Limits to Growth*, in which she was a co-author and the principal writer. AtKisson: "The book was the first computer model of the entire world's resource flow, population growth, and economic development. Essentially this was a look into the future with the realization that if things continued as they were, either we would run out of stuff, or we would have too many people, or we would run out of ways to throw stuff away. If any one of those things happened, we would be likely to see a collapse of civilization sometime in the next hundred years.

"The most important word is 'if.' *The Limits to Growth* and Dana Meadows never said we are destined or doomed to see civilization crumble down around us. They said: 'If we don't change, if we don't wake up, if these conclusions are correct, then we are in

trouble.' The book was viciously attacked by mainstream economists of the day, but data since that time has basically supported the book's argument that unlimited growth will do us in. For example, we've gotten very smart about using resources more efficiently, we keep finding more oil, we have begun to slow population growth, but we have not figured out how not to throw stuff away, particularly errant molecules, most of them out the backs of our tailpipes, smokestacks, etc. CO2 causes global warming. Endocrine disrupters cause birth defects and other problems with our reproductive systems."

## Sustainability

"All of us know what sustainability is," he said. "It's that integrated perspective on nature, economy, our social environment, our individual health and well-being. More than that, it's a dream of a better world for our children, a world where creatures and humans can live together happily and prosperously and beautifully. It's about understanding what fairness means, and what love is about. These are hard things to talk about in policy circles.

"How can we make sustainability happen? How can we create sustainable communities? What does it mean to create change? An acronym I use is ISIS: Indicators, Systems, Innovation, and Synergy. These are four powerful tools that we can use to make change happen."

## Indicators

"Indicators are signals. We are essentially awash in them—numbers that tell us what's important, what to care about, whether we're succeeding or not. We all know about the Gross Domestic Product, for example. Do you know what's gross about it? The GDP was invented during WWII as wartime technology to tell how much stuff we could pump through our factory systems—bullets, bombs, tanks, ships—so that we could beat the Axis powers. Hitler did not have a GDP, and for that reason, 30 percent of his factories lay idle and did not make bullets, bombs, and planes and tanks. That's part of how we outmuscled Hitler—by having better statistics.

"The problem is that wartime technology is not the best way to measure progress. It's a great way to measure industrial output. What the GDP measures is every dollar that goes through every cash register in the country. When you hear that the GDP has increased by 3 percent, it means that the amount of money flowing through the nation's cash registers grew by 3 percent. It doesn't matter what that dollar was spent on. If you walked to this meeting tonight, you did nothing for the national economy. If you drove in a private car, we're talking gasoline, insurance, the big payment you make once a month—good for the national economy. If you had a fender bender, that's much better for the economy: there's the hospital, the doctor, the ambulance, increased insurance rates; now money is flowing like water. The Exxon Valdez oil spill was great for the economy. Hurricane Floyd was wonderful—by the way we measure progress today.

"Indicators have the power to frame reality, and you can do different things with indicators to teach different lessons. Through the Sustainability Institute, we ran an international competition recently for a new electrical meter. The idea was that instead of having that ugly gray thing on the outside of your house with the little spinning dial that nobody can understand, it would be in your house, and beautiful, so that when you turned your lights down, it would reward you sensually. The winner was a little thing called a Wattbug that sits on your coffee table. When your energy is at a sustainable level, it has this little green smile. When your energy use increases, the face changes to a yellow color. When it gets way too high, it has a red frowny face, and makes noises to match. How many parents would love to have that in their kid's room?

"Indicators are also helpful in understanding concepts like exponential growth. A rate of 2 percent per year may sound like things are going slowly, but if the world's population grew at that rate, it would double in 35 years from 6 billion to 12 billion. An annual growth rate of 5 percent results in a doubling every 12 years."

## Indicators for Sustainable Cities

"Imagine a compass in your mind's eye: NESW: Nature, Economy, Society, Well-being. We use these indicators in working with cities to develop measures of their progress—environmental, economic, social, and human health and well-being. Then we crunch that down to a single number which can tell with some reasonable amount of confidence on a scale of 0 to 100 how sustainable a city or a company is, or is not. When we did it last summer for the city of Orlando, we built up some anticipation around releasing their number. The media were so excited they sent television cameras to the director's house to ask if he would tell them in advance what the number was.

"The number doesn't really mean anything, in the same way that the GDP doesn't mean anything. But what it did was get the television cameras out there looking at the landfill, talking to the kids in the schools, talking to people about their jobs, talking about global warming. A year previously when I first walked into Orlando and said the words 'global warming,' people told me: 'You can't say that around here; it's one of those kooky green things.' A year later, the lead editorial in the paper wrote: 'The worst indicator on this report is energy, and it's because we're so vulnerable to global warming here in Central Florida.'"

## Systems

AtKisson: "Systems are a collection of separate elements that are connected together to form a coherent whole." It's important to understand how systems work, he emphasizes, noting that they are made up of Sources—where stuff comes from; Sinks—where stuff ends up; Stocks—where stuff stops along the way, like the gas in your gas tank; and Flows—how stuff moves along.

Systems are also about time, AtKisson adds, explaining the concepts of Oscillations, Delays, and Rates of Change. “Oscillations are things like when a system goes back and forth between two states, like Democrat, Republican, Democrat, Republican. Delays are when you make CFC molecules today, and 15 years later they get to the stratosphere and begin eating up the ozone layer, and 20 years after that, you read about skin cancer rates in Australia. Delays make things difficult to manage, which is why we should go a little slower mucking around with atmospheric chemistry, for example. Rates of Change I’ve already mentioned in connection with exponential growth.”

His final explanation of systems includes Nonlinear Effects—“That’s when a system suddenly goes haywire after it’s been going smoothly,” and Feedback Loops, which is the information coming back around as in the CFC example.

## Innovation

“Transformation is fundamentally about innovation. We learn new skills, we teach them to each other, and that teaching can happen very fast. The concept of exponential growth applies here, and is what can happen to sustainability. It *is* what is happening with sustainability. The Berlin Wall doesn’t just suddenly fall. People on the Eastern Bloc are passing around little mimeographed newsletters for years and decades, going to prison, getting little groups together and talking about it. Then suddenly, what looks like an explosion is just in fact the most recent doubling from a 2 or 3 percent growth rate.”

As an example of the idea of sustainability catching on, AtKisson notes that the heads of companies such as British Petroleum, Shell Oil, Ford, and Volvo are talking about fuel cell cars and having to get out of the oil business. He refers to companies like Electrolux and Interface Carpeting, to the President’s Council on Sustainability, and to sustainable cities programs all over the world to show that progress is being made toward a sustainable future in a variety of places. “It is going to happen. It is really a question of how fast it happens, how fast each of us teaches others. It’s about innovation and diffusing innovation as rapidly as possible.”

## Synergy

The fastest way to diffuse innovation is through synergy and synchronicity, AtKisson says. “You can think of it also as density of social networks. If you mix it up a lot with people and you spread ideas around, the chance of a synchronicity happening goes up a lot. But if you want to be a change agent—someone who promotes sustainability—and you want to be effective, it’s really important to do a fearless and searching inventory of your own skill base, and personality type, and profile in the community. This is perhaps the hardest piece of advice that I’ve ever gotten or I can ever give you. If you have certain ideas you are passionate about, you need to think about where is the best place for you to promote those ideas. If you’re a person who loves to dress up in dreadlocks and tie-dyed shirts, don’t go into corporate consulting to promote sustainable development. Think about who you know, and what they think about you, and think to yourself: Am I the best

person to go to the city council and talk about this idea? Or should I be sneakier about this and put a couple of papers from *Harvard Business Review* in the hands of this mainstream business leader? Just throw a lot of seeds out there.

"If you have a lot of passion for what you're doing, thank whatever deity you prefer to thank, and go for it. But in that passionate state of mind you may also be a little unbalanced. That's OK because if we were wise, sage, balanced all the time, with compassion towards everybody, and totally satisfied with life, change would not happen. Just think about where the best use of that energy is."

Toward the end of his talk, AtKisson quoted Donella Meadows, who wrote in the final chapter of *Limits to Growth:* "One is not allowed in the modern culture to speak about love, except in the most romantic and trivial sense of the word. Anyone who calls upon the capacity of people to practice brotherly and sisterly love is more likely to be ridiculed than to be taken seriously. The deepest difference between optimists and pessimists is their position in the debate about whether human beings are able to operate collectively from a basis of love. And in a society that systematically develops in people their individualism, their competitiveness, and their cynicism, the pessimists are in the vast majority. That pessimism is the single greatest problem of the current social system, and the deepest cause of unsustainability. A culture that cannot believe in, discuss, and develop the best human qualities is one that suffers from a tragic distortion of information. It's difficult to speak of, or to practice, love, friendship, generosity, understanding, or solidarity within a system whose rules, goals, and information streams are geared for lesser human qualities. But we try. And we urge you to try. Be patient with yourselves and others as you and they confront the difficulty of a changing world. Understand and empathize with the inevitable resistance. There is some resistance and unsustainability in all of us. Include everyone in the new world. Everyone will be needed. Seek out and trust in the best human instincts in yourself, and in everyone. Listen to the cynicism around you and pity those who believe it. But don't believe it yourself."

AtKisson's own final thoughts: "Our forefathers and mothers did their level best to build a better world for us, and they did build one that is much more comfortable for us. Our task is to build a sustainable world. It's the task of a generation, or two, or three. We don't know what the world is going to look like after that. I'm sure we will create a whole new list of problems that our descendents will look back on and think: What a bunch of idiots. But they'll also thank us because they will know how close we came to losing it. And they'll know that we made it; they'll know that, too."

## Blips on the Timeline

*The term "blip" is often used to describe a point of light on a radar screen. Gathered with the assistance of Research Director Jackie Mathes, here are some recent blips which indicate positive changes toward a global community.*

## Unleash the Potential

Many governments may not be acting to halt climate change, but the UN's panel of 100 experts—the Intergovernmental Panel on Climate Change (IPCC)—reports that technologists are forging ahead with a host of innovations that could halt the rise in greenhouse gas levels. The report says that technical innovation has been faster than anticipated five years ago when IPCC made its last assessment. Wind turbines, hydrogen fuel cells, and efficient car engines could become practical ways to cut greenhouse emissions if widely adopted. Furthermore, technologies already available could stabilize CO2 concentrations in the atmosphere in the range of 450 to 550 parts per million. In the past, IPCC members have suggested 750 ppm as a more achievable target. "Governments need to unleash this potential, said Klaus Töpfer, director of the UN Environment Programme. More at: http://www.opcc.ch/

## Torture Alert

Last fall, Amnesty International launched its Fast Action Stops Torture program (FAST). Citizens can sign up to receive an e-mail alert when a prisoner is the victim of inhumane treatment, then log on to the Amnesty web site to send an e-mail form letter to the offending government. "The response has gone beyond what we were hoping for," said Joe Baker, Amnesty International's director of Inaternet communications. Of the ten cases FAST has targeted since the e-mail program started, five prisoners have been released and one was given medical treatment he had been denied. Since most torture occurs in the first hours or days after someone is taken prisoner, Baker says e-mail and programs like FAST are critical. More at: www.amnestyusa.org/fast.

## Running on Air

French race-car driver Guy Negre has invented the e.Volution, a car that runs on air. Compressed air pumped into the 1500-pound vehicle is slowly released to power pistons that drive the car. A fully pumped e.Volution can travel 120 miles for a mere 30 cents. Filling the tank at home takes four hours; a fill-up at an "air station" takes three minutes. The car's only emission is air. Priced at $10,000, the air-car is already rolling off production lines at factories in France; three factories are being built in Australia; three more are under construction in South Africa, Mexico, and Spain.

## Flushing New York

In the early 1990s, New York City faced a water shortage. With an influx of new residents and an increase in the number of drought years, the city needed to find 90 million gallons of water a day. The Department of Environmental Protection set out to replace a third of the city's inefficient toilets, allotting $295 million for up to 1.5 million rebates. Some 20,000 applications arrived within three days of the program's start, and by the time it ended in 1997, low-flow toilets had replaced 1.33 million old ones in 110,000

buildings. The result: a 29 percent reduction in water use per building per year, and water savings close to the 90 million gallon-a-day goal. The city has also made several hundred thousand inspections requested by residents, saving 11 million gallons a day in eliminated leaks and increased efficiency, and has installed sonar to scan for leaks along 6,174 miles of underground water lines. Per person water use has dropped from 195 to 169 gallons a day, and the downward trend continues.

### SUGGESTIONS INVITED

We are always on the lookout for interesting subjects for Blips on the Timeline. Readers are invited to send articles or clippings indicating positive change to Jackie Mathes at the Foundation.

If we use your suggestion, we'll automatically extend your subscription for a year.

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# Hope on Global Warming

## The Climate Neutral Network and the Shaklee Corporation demonstrate a creative approach

## By Walter Hays

The scientific consensus is clear: Global warming is here, and it is predominantly human-caused. In January, the United Nations-affiliated Intergovernmental Panel on Climate Change, which includes the world's top climate experts, issued a report stating that the average global temperature could rise by as much as 10.5 degrees Fahrenheit over this century, greater than in the past 10,000 years. Other reports by the same group have predicted that such warming will increase the incidence of extreme weather events (they have already increased dramatically in the last decade), melt glaciers and icecaps and thereby flood island nations and coastal areas (again already happening), cause tropical diseases like malaria and dengue fever to migrate northward (e.g., the West Nile Virus in New York), and accelerate the already horrific extinction of species.

Despite such overwhelming scientific opinion, our current administration recently reneged on an earlier commitment to reduce greenhouse gas emissions, and is devoting major effort to increasing the production and use of the fossil fuels that are the primary cause of warming.

It's a classic situation in which an individual who cares can easily feel overwhelmed, knowing that great harm is being done but not seeing anything he or she can do about it. But fortunately for us all, there are always a few people—and companies—who refuse to accept such an outcome, and by their actions prove once again that committed individuals can make a difference.

In the case of global warming, one such person is Sue Hall. Originally from England, Ms. Hall graduated from Cambridge and started her career teaching high school math and

English, but soon switched to management consulting. Having always been passionate about the environment, she found that while she enjoyed consulting, she yearned for work with greater meaning. At her company's urging, she returned to school, earned an MBA at Harvard, and then accepted a fellowship to study whether corporations could obtain a competitive advantage through a proactive commitment to environmental performance beyond regulatory compliance, and whether non-business stakeholders could play a constructive role in such a process. Her research indicated that the answer was a resounding "Yes!" to both questions, so she founded her own consulting firm, Strategic Environmental Associates, with the stated mission of "helping companies and other stakeholders create business-based solutions to environmental problems."

In the course of that work, Hall began three years ago to focus on the issue of global warming. She convened focus groups on the subject, and found that people generally felt disempowered on the issue. However, they became excited over the concept of having businesses commit not only to reducing their own greenhouse gas emissions, but also to offsetting any unavoidable emissions by reducing them elsewhere, especially if the offsetting reductions included social and community benefits. Since that reaction indicated that such a commitment might also earn a company competitive advantage, Hall saw an opportunity for an initiative to accomplish all of the three "Es" of sustainability—environment, economy, and equity—or as some prefer, the three "Ps," planet, profit, and people.

To pursue that opportunity, Hall engaged a wide spectrum of stakeholders—companies, nonprofits, government officials, and others—to establish a process by which a product, service, activity, or entire enterprise could be certified as being "climate neutral." Forming a nonprofit called the Climate Neutral Network, she engaged leading environmental organizations to establish what she calls "gold standard principles" for such certification. The participating organizations included such prominent groups as the Rocky Mountain Institute, Natural Resources Defense Council, World Resources Institute, Conservation International, and Nature Conservancy. The principles require that any company seeking certification first do its utmost to reduce greenhouse gas emissions from its operations, and then calculate the precise amount of remaining emissions and invest in programs outside the company that not only offset those emissions but also provide social benefits.

The first full enterprise (as contrasted with a specific product or service) to obtain certification under those principles was the Shaklee Corporation, which sells nutritional supplements and personal care and household products through a network of independent distributors. Shaklee's founder had committed to developing products that were biodegradable, so it had an environmental orientation from its beginning. It had therefore already taken major steps to reduce its emissions. For example, its recently completed world headquarters in Pleasanton, California, incorporates such innovative strategies as the maximum use of the sun, with atria that bring daylight deep into the building's interior, minimizing the use of electric lights; an underfloor air supply that assists in controlling heat fluctuation; and motion sensors that automatically turn equipment and

lighting off when a room is vacated. In addition, sustainable building materials and practices were used throughout the facility's design and construction, including the use of recycled, certified sustainable, and environmentally safe materials, finishes, and products; Interface carpeting, made from recycled fibers and itself recyclable; and textiles dyed with recycled inks and woven with recycled materials. The company's manufacturing facility in Norman, Oklahoma, features similar pollution- and emission-reducing efforts.

Having cut its own emissions as much as possible, Shaklee's next task was to conduct a comprehensive survey of the remaining, unavoidable "footprint" of greenhouse gas emissions resulting from the entire spectrum of its operations. In determining the "boundary" for that analysis, the decision was made to use a "dock-to-dock" definition, which meant counting everything from when materials arrive at the company to when they are shipped to the end customer. (While stringent, this was less so than a "cradle-to-grave" approach, which would have included such additional items as raw material extraction and contract manufacturing.)

The resulting analysis, as described by Ken Perkins, Shaklee's Director of Health, Safety and Environmental Affairs, was rigorous, including the following operations and calculations of their annual carbon dioxide (CO2) emissions: employee commuting (1,738 tons), electricity usage (12,791 tons), natural gas usage (3,414 tons), air travel (513 tons), transport from contract manufacturers to Shaklee warehouse (1,162 tons), transport from warehouse to end users (350 tons), and "Sales Leader" (employed distributor) car and air travel (4,479 tons)—for a total footprint of 24,448 tons of CO2 per year. While space does not permit a full description of how all the tonnages were arrived at, Mr. Perkins' analysis of employee commuting is illustrative:

"We used a total of 857 employees driving an average of 25 miles round trip for 220 workdays. An average of 19.8 miles per gallon (source: "Household Vehicle Energy Consumption, 1994," U.S. Department of Energy, 1995), at a rate of 19 pounds of CO2 per gallon. Employees who used mass transit were accounted for separately. The total of miles traveled per year was 3,853,200, which, using the conversion factors listed above, came to 1,738 tons of CO2 per year."

(The tonnage for this operation would have been considerably higher if Shaklee had been required to include the mileage traveled by its half million independent distributors. However, the Network Advisory Panel decided that because they are independent businesses not under the company's direct management control, they need not be included.)

While the foregoing footprint calculations are impressive, it was in determining the actions to offset that footprint that the company exercised its creativity— and in so doing established its commitment to equity, as well as environment and economy. With the assistance of Trexler and Associates, an Oregon-based firm specializing in climate change mitigation, Shaklee chose the following as its Climate Neutral Offset Portfolio:

## Coal methane utilization

Methane gas is a considerably more damaging contributor to global warming than CO2, and abandoned coal mines vent large quantities of methane to the atmosphere. Shaklee is investing in technology that will both prevent this gas from being released and utilize it in producing electricity.

## Rural solar electrification through photovoltaics

Seventy percent of the population of the developing world do not have electricity, and rely on candles, kerosene, and other liquid fuels for power. By eliminating the need for such fuels, a 35-watt photovoltaic (solar electric) system for a household would avoid more than 12 tons of CO2 emissions over its lifetime. Shaklee is contributing to a loan program in India for purchasing such systems.

## Energy efficiency in public schools

The Portland Oregon School district had adopted a program of reducing energy usage to the lowest level consistent with efficient learning. As part of that program, it wanted to replace 213 oil-fired steam boilers with more efficient ones fired by natural gas, but the enactment of statewide property tax caps left it with insufficient funds. Shaklee paid for the replacement, achieving not only major emission reductions, but also financial savings to the district of an estimated $250,000 over the lifetime of the project.

Two other companies have achieved certification to date: Interface Carpets, for a new flooring product, and the Saunders Hotel Group, for energy-efficient accommodations in its Boston hotels. In addition, the Network lists several exciting projects as under development, including the following:

• A major oil company has committed to provide Climate Neutral-certified “Cool Fuels” to interested customers, sharing the incremental offset costs.

• Leading colleges want to build a Climate Neutral pilot project to showcase how campuses can save money.

• A major clothing retailer is committed to becoming a Climate Neutral-certified enterprise by 2005.

As indicated above, these companies naturally hope that their demonstrated commitment to dealing with the global warming crisis, while providing community benefits, will at the same time reap gains. As stated on the Network web site: “Companies seek to gain competitive advantage through increased market share or being identified as preferred suppliers. Such initiatives could also reduce costs, increase employee or customer loyalty,

and demonstrate business leadership to government regulators, politicians, the media, and other stakeholders."

In that vein, the Network was featured in a cover wrap of the *Harvard Business Review*, entitled "How Taking the Heat Out of Global Warming Can Build Your Bottom Line." The existence of the Network demonstrates the theme of this article—that individuals and companies can make a difference on a major issue like climate change even if their government is temporarily stuck. Shaklee's contribution was best summarized by Denis Hayes, founder and chair of the Earth Day Network, who said that the Climate Neutral certification "shows that the private sector can be leaders, not followers, when it comes to protecting the earth's climate." And it would be hard to find a better example of the impact of a single individual than Network founder Sue Hall. Starting with the notion that there should be a way for companies to gain competitive advantage through environmental commitment, she expanded that notion to a vision that could turn the tide against global warming—harnessing the market power of other caring individuals to motivate businesses to achieve climate neutrality voluntarily.

*Hall considers her group a "learning network," and therefore encourages interested persons to check out her web site www.climateneutral.com and submit questions or suggestions.*

## A New Spin on the FGC Web Site

If you've visited the Foundation for Global Community web site (www.globalcommunity.org) lately, you've probably noticed that change is in the air. Along with a new look and navigation tools, the site now offers visitors the opportunity to explore the 5-billion-year history of life on the planet by taking the Walk Through Time Online. It also features a new Calendar of Events and pages describing the wide range of projects and courses currently offered by the Foundation.

These changes were designed to make the site more appealing and user friendly. Further improvements are planned for the coming months as part of an ongoing effort to develop a comprehensive, interactive web site

**The Foundation for Global Community** is a project-based nonprofit educational organization, which recognizes that natural, social, and economic systems are all parts of a single interconnected whole. The Foundation has been promoting cultural change, facilitating personal development, and strengthening community connections for over 50 years.

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**Managing Editors:** Kay Hays, Mac Lawrence
**Editorial Board:** Jim Burch, Sandra Mardigian, Jackie Mathes, Walter Hays
**Art Director (print edition):** Sue Lyttle
**Desktop Publishing:** Diane Gordon
**Electronic Edition:** Timeline Team

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