

Timeline

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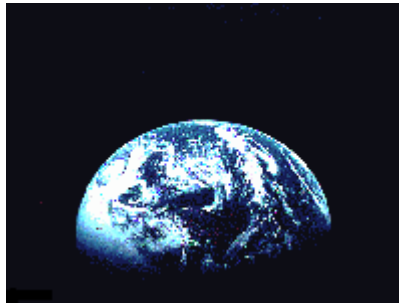
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The Land Institute

Wes Jackson talks about the problem of agriculture.

When people, land, and community are as one, all members prosper.

When they are competing interests, all members suffer.

--The Land Institute

Author, botanist, plant geneticist, and native Kansas farmer Wes Jackson believes the world's ability to feed itself is endangered. Twenty-three years ago, he founded The Land Institute in Salina, Kansas, to research sustainable alternatives to a petroleum/chemical-dependent agricultural system that is rapidly destroying our soil and other resources. The Institute has 370 acres which include a natural prairie preserve and experimental plots. It seeks to develop a poly-culture of high-yielding, perennial seed-bearing grains to replace the monoculture of annual staples like corn, soybeans, and wheat. A video production team from the Foundation recently interviewed Jackson for a program which will be released later this year.

The Land Institute is a non-profit educational and research organization. We're devoted to the search for sustainable alternatives. We are particularly looking at what we call the problem of agriculture, rather than problems in agriculture. The problem of agriculture is about 10,000 years old, and it features soil erosion and the salting of soils. With the coming of the Industrial Revolution, fossil fuel dependency has been added. And then, during the chemical era, the introduction of

chemicals that our body tissues have no evolutionary experience with has further compounded the problem.

“In a certain sense, The Land Institute isn't very far from 'home' in the prairie states, the Great Plains, because our earliest ancestors gained an upright stance on a similar piece of landscape east of the Great Rift in Africa. They were savanna grazers and dwellers. So it's not surprising that when they got into agriculture they continued the grassland experience. They just went for nice plump grains that were found among the annual grasses. Some 70 to 80 percent of all calories we eat today are from the grass family. So to begin to think about solving the problem of agriculture, we're fortuitously positioned.

“We're looking at the way the native prairie is able to sustain itself—to sponsor its own nitrogen fertility, to feature material recycling, to run on contemporary sunlight. The first thing The Land Institute did was look to nature and ask, 'How have ecosystems been working over the millions of years? What are the patterns that have shaken out?'

“This turning to nature to inform us is about 180 degrees away from the way modern agriculture works. Agriculture today treats nature as something to be subdued or ignored. Grain fields (e.g., wheat, oats) are planted every year and grown in a monoculture. There's soil erosion. There's fossil fuel dependency for both nitrogen fertility and for vehicles. On the other hand, there's the prairie, with its perennials continuously renewing themselves and species diversity instead of monoculture. The

prairie does not have soil erosion beyond replacement levels. The question we've asked ourselves is, can we tweak it in some way to produce efficient food grains for consumption sustainably?

“Well, there were really four basic biological questions we had to address. The first is whether perennialism and increased seed yield could happen at no trade-off cost to the plant. My daughter's Ph.D. work at Cornell pretty well nailed that down. The second question is whether a polyculture of perennials can outyield a monoculture of annuals. The third question is whether the system can adequately manage insects, pathogens, and weeds. And the fourth question is whether the system can sponsor enough of its own nitrogen. Of course, there's still a lot of work to be done, but we are now saying that in the course of, say, a quarter of a century, with adequate funding, we could have a fundamentally different agriculture beginning to appear on the American landscape. It would be as different from what we have now as the airplane is from the train.

“One of my concerns is that most of us in the scientific culture are still more the children of Francis Bacon and Rene Descartes than we are the children of Darwin. Even most evolutionary biologists are not what I'd call 'deep-Darwinians.' As a result, the largest impediment, I think, is the human mind that is operating with some underlying presuppositions. We're talking about a philosophical shift. We are pursuing the possibilities of looking to what I call the Darwinian, evolutionary, ecological worldview.

“For instance, when you feed dead sheep to cattle, you get mad cow disease. Baconian/Cartesian reductionism would say, 'Well, sheep, dead, ground up, consist of this, this, and this that are nutrients to cattle, so, therefore, we'll feed it to cattle.' Mad cow disease is a derivative of reductive thinking. No sensible deep-Darwinian would feed dead sheep to cattle.

“And when the farmer sprays 2,4-D, a known cause of non-Hodgkin's lymphoma, pests are eliminated, but if someone has to get treatment for that disease, there's a cost to society in the hundreds of thousands of dollars. When a farmer puts on natural gas-based nitrogen fertilizer, he gets a huge bump in yields, but the nitrates go into the groundwater. I have two grandchildren who recently visited a city park in a town in Kansas where they couldn't get a drink out of a fountain because of the nitrate pollution.

“It's a very different set of lenses that is put over the eyes of those who are looking to the way nature's ecosystems have worked. The research will ask questions like, 'What will nature require of us here? What will nature help us to do here?' This is very different than asking, 'What can we get away with?' What can we get away with is the child's question. The other is the mature and moral adult question and that difference is crucial.

“I tell farm audiences all over the country that there are more people in cities concerned about soil erosion than in the countryside. I remember once being with a U.S. Department of Agriculture official who had calculated the cost, the value of

soil going to production, as about one dollar per acre per year. A very simple question put to that person would have been, ‘What if we don’t have any? Then what’s its value?’ In the long run, soil is just as much of a nonrenewable resource as oil. And, of course, part of the modern problem is that we treat soil like dirt. We don’t recognize soil as the source.

“Aldo Leopold said there are two spiritual dangers that come from not growing up on a farm. One is the belief that heat comes from a stove and the other is the belief that food comes from a grocery store.

“When I was a kid growing up on a farm here in Kansas, in the Kansas River valley near Topeka, I’d be asked to go out and catch a chicken that would be fried up for lunch or noon meal. There would be potatoes, perhaps, that would have been dug out of the garden. There would have been, perhaps, some peas. Now what came out of all of that? I would say I learned more in the first 18 years of life on that farm than I learned getting an undergraduate degree and a Ph.D. in a land grant institution. I mean, I may be a geneticist, I may be a botanist, but that sort of formal education versus what the land taught me and a culture taught me was minuscule.

“Part of our agenda for the next century has to be to make soil health and human health one subject. Our mission statement at The Land Institute goes something like this: When people, land, and community are as one, all members prosper. When they are competing interests, all members suffer.

“The Sunshine Farm at The Land Institute is 150 acres, running on contemporary sunlight. It’s a ten-year project, headed by Dr. Marty Bender, in which we look at energy, materials, and labor. We want to do it in the most ecologically correct way possible, and there are two purposes. Number one: We want to expose a cheap food policy that externalizes and hides much of the costs. If you’re going to do this on contemporary sunlight, that means going all the way back to making that farm pay for mining the ore in the Minnesota iron mines and carrying it through to Gary, Indiana, and Moline, Illinois, in order to build a tractor. And then there’s the fuel for running that tractor. And so on.

“Purpose number two is to get an even playing field for comparing natural systems agriculture with conventional agriculture methods and monocultures. And my bet is, the efficiencies inherent within the natural integrities—as a consequence of mimicking the vegetative structure of the never-plowed native prairie—are going to make it possible to beat the pants off of annual monocultures.

“I have 65 people that make up our advisory team, mostly scientists. We are increasingly seeing scientists within the universities who are tired of simply calling out the score, telling how bad the story is. Now we’re at a point where they are saying, ‘Look, I want to work on something positive. I want to be working on a solution.’ So, although it may appear rather audacious for me to say, it is now possible to solve the 10,000-year-old problem of agriculture. What that does is to begin to attract some scientists toward a solution.”

Asked what motivates him, Jackson replied: “This is a beautiful place. It’s incredible to think how isolated and alone this planet is. It’s the planet that set the pattern of ions in our blood. It’s the planet whose atmosphere is molded on metabolism. It’s a planet that’s filling up fast and the ecological capital that supports the standing crop of humans is being eroded. So, there’s nothing better to do, except to be constantly aware of that reality and try to work on it. I guess it’s an act of love.”

The Land Institute

Natural Systems Agriculture

This research is pioneering a perennial polyculture, a mixture of perennial plants that mimic the native prairie ecosystem. The Land Institute believes that with additional research, an agriculture that is resilient (and therefore productive over the long term), economical (the need for costly inputs would be significantly reduced), and ecologically responsible is well within reach.

The Sunshine Farm Research Program

Now in its seventh field season, the farm is collecting comprehensive data on the energy, materials, and labor going into 50 acres of conventional crops and 100 acres of prairie pasture grazed by cattle. The goal is to calculate the amount of productive capacity that a sustainable farm must devote to its own fuel and fertility. With this information, a more effective national policy could be

formulated for the transition of agriculture to renewable energy.

The Intern Program

Each year, eight to ten graduate-level students have come to work and study at The Land Institute from February to December. They conduct field research, participate in a curriculum with staff and visiting scholars, and perform farm chores. There are now nearly 200 former interns active in various parts of the world.

Rural Community Studies

Matfield Green is a rural agricultural town of about 50 people located in Chase County, Kansas. Eighty percent of the county is never-plowed tallgrass prairie. The Land Institute is in the process of restoring buildings in Matfield Green; a former grade school has been converted into a conference facility to explore ideas for ecologically sustainable communities. Wes Jackson says, “We believe we are granted more creativity when thinking about issues within their context rather than in universities and airport hotels.”



For Russia with Love

A Conversation with Sue Lyttle

When she’s not working on the next issue of *Timeline* or playing with her grandchildren, *Timeline*’s Art Director, Sue Lyttle, can often be found speaking, in Russian, with a journalist from St.

Petersburg, or an accountant from Stavropol, or a baker from Moscow.

It's part of her work with the Productivity Enhancement Program, a project which brings Russian entrepreneurs to the U.S. and gives them tips on how to be successful in business. "They're small-business people," Sue emphasizes, "not the big privateers who became billionaires by taking over large state industries like the iron works and just cleaning them out and walking away. In our program, we work with businesses like clothing manufacturers, furniture makers, and food processors." Sue works as a volunteer with the PEP project several times each year as a host or as a business education coordinator for a visiting delegation.

"When I was in high school," Sue says, "the Sputnik satellite went up, and I, like many others, was encouraged to study math and science to 'get ahead of the Russians.' I studied math and then went to work in an electronic defense company. I met my husband, Jim, who was a satellite engineer, while working there." Sue smiles when she recalls last October's group of Russian technical communications specialists who came to learn more about the business side of producing cell phones and fax machines. "I could never have imagined 30 years ago that Jim and I would be sitting at our dining room table with four Russians laughing and joking (in Russian, no less) about the times when they were spying on us while we were spying on them.

"My current interest in Russia started in the early '80s when I met Sharon Tennison at a women's convocation. We talked about how destructive it is to

create and nurture images of the enemy—in those times, clearly the big, bad Russians. Sharon's thought was, 'Well, let's go see who this enemy really is.' So she began taking people to Russia to simply walk around the streets and meet people. Next, she began bringing Russians here to have a similar experience, walking around our streets and meeting people while living in American homes. From these experiences Sharon founded the organization called Center for US/USSR Initiatives which is now the Center for Citizen Initiatives (CCI), the organization behind the Productivity Enhancement Program.

"One of my first involvements with CCI was the 'Soviets Meet Middle America' project. I coordinated the visit of a group of Russians who came to my town (Palo Alto, CA) and lived in local homes, giving the Americans and Russians alike the experience of meeting each other, talking at a very personal level, and forming strong friendships. We quickly learned that when 'the enemy' becomes a person, and moreover, a friend, one could no longer tolerate the idea of building devastating weapons to wipe out your friend. I continued to work with this project helping similar visits to occur in towns all over the U.S.

"One day, Sharon showed me a request from a group of young Russian women in Moscow who had asked CCI for help with the availability of stylish clothing. I recruited my friend Carol Braun and a new project was spawned. At first, we had no idea how to help. We researched the problem, sought the advice of lots of knowledgeable people and set off on our first of many trips to Russia. We formed a number of Soviet-American sewing

clubs. We would take groups of Americans to the Soviet Union and meet with clubs that we originated in Moscow, Leningrad (now St. Petersburg), Kiev, and Novosibirsk. We took fabrics, patterns, and fashion books with us. Together, we sewed some garments and talked about clothing and fashions. But more importantly, we talked about the personal potential of women when they get together.

My daughter came on one trip. She's taller and thinner than I, so we were able to model a way to wear the same clothes on two different body types. What was a cowl neck collar on me became a band at the hips gathering in her skirt. We used clothing as a demonstration to encourage creative thinking: what groups of women—small groups, two, three, four at a time—could do, helping and supporting each other. We had a great time, and I think we made a difference in the lives of both the American and Russian women. This was a big step from 'Well, let's go see who this enemy really is.' We went and saw and made really good friends and strong connections. We were one of the first groups to stay in Russian and Ukrainian homes, and among the first groups to travel independently, not with the Soviet Intourist Agency. We lived and traveled as the Russians and Ukrainians did, not as foreign tourists.

"In 1991 the political and economic situation changed radically in the Soviet Union, and thus for our clubs and groups there. We couldn't operate on the same basis any longer. My husband Jim had retired and came with me on a trip (his first to Russia) to thank all our project friends and close down the clothing

project. By that time I had fallen in love with the Russian people. They're not so different from us. We found people who are friendly, funny, very open, and thoughtful. You start making friends, you want to help your friends, you make another friend, and it starts snowballing.

"After the clothing project was finished, Jim and I made a trip as part of the emerging business education projects of CCI. We took a group of American volunteers to Pushkin (near St. Petersburg) for a month to remodel a 300-year-old building into a business training center. Jim ended up staying three months to see the work finished. We took a huge 40-foot sea-land container filled with plywood, carpeting, and other building materials that were scarce in Russia, as well as donated computers and desks and a whole business library donated by Stanford University. The Americans worked alongside Russian volunteers, and hired Russian construction workers to make a modern, convenient center. Today CCI is offering business management training in facilities like that in eight cities throughout Russia, as well as in the U.S.

"Russia is not a comfortable country to visit just now. But the history is rich, the art is beautiful, and there is a remarkable sense of longevity. In a place like Kiev, once a capitol of ancient Russia, you walk on streets that are a thousand years old, and you can still see art from that time. Being in Russia, you have the feeling that they are a nation of survivors and that with their hard work the current difficult times will pass.

"Today, the Productivity Enhancement Program brings 60 groups of Russian

entrepreneurs each year to every part of the United States for visits of three weeks. The groups, usually sponsored by civic clubs like Rotary or Kiwanis, spend about 15 days in business training provided by American business hosts. Many share the view that it is to our benefit in the U.S. to do everything possible to help make the Russian economy work. The more it's not working, the greater the temptation for Russians to sell nuclear materials or other technology that will destabilize the world. Helping the Russian economy is not just to be nice to the Russians—it's really for our mutual survival."



The True Wealth of Nations

Theodore Roszak

Theodore Roszak is a professor of history and the author of a number of books which explore culture and sociology in the 20th century, including The Making of a Counter Culture, The Voice of the Earth, and Ecopsychology. His latest book, America the Wise: The Longevity Revolution and the True Wealth of Nations, is about the cultural, economic, medical, and ecological aspects of the demographic transition to a predominantly older world population, and presents this unprecedented development as the true wealth of nations. The following remarks are from a talk by Dr. Roszak at the Foundation's center.

I'm going to speak to you tonight as an historian, and I'm going to suggest that

we are at a particularly significant historical turning point. In this generation, we find ourselves at the culmination of an industrial revolution which is transitioning into what I call the "longevity revolution."

"The industrial revolution." Phrases like that have to be invented. The industrial revolution was invented by Arnold Toynbee as an idea that helped tell people where they were at a specific time. You may be familiar with another Arnold Toynbee who became quite famous in the 20th century. This was his uncle, also an historian. In a lecture at Oxford in 1884, he coined the phrase "the industrial revolution" in order to give people a sense of where they were, a sense of hindsight that covered about a century going back to the 1780s. He described it as a period of enormous population growth accompanied by—this was the significant part for him—the intrusion of selfishness into the marketplace. He said that when you put those two together you have the essential features of the industrial revolution. Well, I'm going to speak as an historian to define what I think is the culminating phase of the industrial revolution—the longevity revolution. This is how it all turned out, and we're living through it.

The longevity revolution is a great turning point. The first part of it is very simple: More people are living longer. Life expectancy is rising in every industrial society and in a surprising number of third world societies. A full-page ad I came across in the *Wall Street Journal* says, "Every time you wash your hands, sing happy birthday twice." Reminding you to wash your hands is very good advice. Follow it, and you'll

live longer. It connects with something called public health, one of the greatest achievements of the modern world. A lot of us are alive today because of anonymous, heroic people through the 19th and early 20th centuries who crusaded for clean water, better food, better nutrition, vaccinations, washing up before you eat—commonplace things which extended life-expectancy from about 47 at the beginning of the century to over 80 at the end of the century. Most of that has been due to breakthroughs in public health, even more than breakthroughs in medical science.

“Study shows power of potassium to prevent strokes”—newspapers reserve an increasing amount of space for items like this. Why? Because such stories tell us how we may be able to live a little bit longer. “Breakthroughs in drugs for breast cancer”—such discoveries are going on all the time. Today, we have very ambitious ideas about health and long life. The phrase “life extension” has appeared within the last decade. I subscribed to a magazine called *Life Extension* when I was writing my book because it is a compendium of good and bad ideas about extending life. I was particularly impressed by the slogan on every cover: “Living longer, extending life span, reaching for immortality.”

When I started writing my book, I didn’t take that prospect very seriously, and I don’t now. But I was led to look into biotechnology, a growing field of research where there is an interesting new paradigm: reversing the aging process. I discovered that the research is written up in reputable journals, and even though it is highly entrepreneurial in the sense that it is being done for

profit—which does somewhat worry me—it is substantial research. There are serious projects, and there are breakthroughs in that field. Now, even if the biotechnicians are exaggerating when they talk about a prospective life expectancy within the next century of 200 or 250 years, just adding a decade or two means that somewhere in the next century we will have an enormous number of healthy centenarians. It used to be quite remarkable to reach 100. The president sent you a telegram! Now we are heading toward as many as 50 to 100,000 centenarians within the next generation.

Longer life is accompanied by another development that has been called the “birth dearth”—the declining fertility of societies around the world. When I first got involved, back when Paul Ehrlich was writing his book, *The Population Bomb*, all of us in the environmental movement were convinced that overpopulation was the one great problem that would be the most difficult to solve. None of us guessed that this might change rapidly and radically. And yet, it has.

In some parts of the world, like Africa, in spite of dropping birth rates, rising population will remain a problem for another generation or two. But, for the first time, we have projections of a global decline, especially in the industrial societies. There are now more people in Japan above the age of 65 than below the age of 16. Japan has become the oldest society in human history—the average age is about to go over 40. In other societies, even Catholic societies, the birthrate has dropped to 1.1, 1.2—well below the replacement rate of 2.1.

In fact, it is very likely that in the next century young people and children will become rarer and rarer in the world, and many governments are beginning to worry. The birth dearth is perceived as an economic problem—not enough consumption and a threat to productivity, pensions, and the welfare system. So, in Japan now, there are rewards given to couples that have more than two children—they receive a rental car for three years and \$1500. In the Czech Republic, the government has put up billboards addressed to young couples that say, “Be less careful.” One I saw showed a picture of a naked Johann Sebastian Bach surrounded by 20 little Bachs as a model to emulate. In Germany, cash rewards are given to families that have a second child.

One consultant has proposed that within another generation, the Japanese may have to find ways to import young people into Japan as a resource. The great question is, where will they find them?

Some people are puzzled as to why this is happening, but it seems to me it is fairly obvious: Women. Women around the world are finding more options in life than child bearing and child rearing. Wherever societies seek to modernize, the birthrate falls. Women have fewer children or they have none or they wait until later in life to have children.

But not all the decline in birth in developed societies can be traced to conscious choices. In many societies around the world, the sperm count is dropping. Scientists have come to the conclusion that there are chemicals being

released into the environment that are estrogen imitators and interfere with fertilization. This presents an interesting prospect: In highly developed societies, given what they do with their resources, which is to produce a lot of synthetics, there may be some built-in brake upon population growth. Scientists have also observed strange things happening with animals in the wild. A story that appeared recently said: “Pollution linked to the feminization of wild animals,” meaning the males begin to take on female characteristics that no longer permit them to reproduce—again due to synthetics in the environment.

So there may be forces at work in the world as a result of modernization and high industrialization that actually rein in population. Some of these forces may be cruel. In Africa, where there is a population boom still in process, AIDS has cut back substantially on population growth in several countries. AIDS tends to strike the most sexually active part of the population. This is a kind of population control that nobody ever wanted, but there it is. Diseases, especially as they can be spread today by rapid transportation, are among the factors that even developed societies now have to take into account when they think about population.

The first factor in the longevity revolution is that more people are living longer, and the second is the birth dearth. When you put these together, you have an unprecedented state of affairs in the history of the world. Every succeeding younger generation from here on out will be a smaller part of the total population, but everybody who gets born will probably live longer than his or her

parents. Industrial societies age. It's inevitable. It's built-in. It's a product of their medical science and it's a product of the choices their young people make to have smaller families.

The United Nations has said that there is every possibility that by 2150, total world population will drop to 3.5 billion—smaller than world population today. Wherever those projections appear, however, it is usually in the context of great concern, even trepidation or fear. One article I found was headed, “The Rise of the Wrinklies”—you must be over 60 to qualify as a Wrinklie—and it asked, “Will the world cope with rapidly aging populations?” It made some ominous suggestions that maybe the real problem is not overpopulation, but aging population, because this could be very costly. We've been hearing this in the United States—that our aging population is going to be very costly. Have you ever heard anybody say anything good about the fact that America is getting older?

I think we had better start thinking about this aspect of the longevity revolution: Is it good, or is it bad?—because it's inevitable.

How often do you come across stories like this one from a recent newspaper: “Bleak forecast for future of healthcare.” The bleak forecast is that it's going to cost so much. We're going to have to pay a lot to have long, healthy lives. When I read stories like that, I always want to ask, what else are we going to spend our money on? Spending money on healthcare, on long life and good health, sounds good to me! As an environmentalist, I worry a great deal

about people spending their money on frivolous things. But I don't think long life and good health are frivolous things. In fact, I can't think of anything better to do with our science and our resources than to employ more and more people to give us a long and healthy life. Healthcare is an economy. Anything you put into it circulates and becomes wages; it becomes profits; it becomes investments. Is there some God-given law that says we have to be an automotive economy or a high-tech economy? I suggest that in the next century we will become a healthcare economy, and by the middle of the century we will take it for granted that 30, 40, 50, 60, even 70 percent of our national income is spent on long life and good health.

My friends, my position on this issue is radical. I don't think you've ever heard it before. I would suggest that this is the true wealth of a nation: Long life and good health. My book starts with an epigraph from John Ruskin, who said, “There is no wealth but life.” That's what we're talking about. After writing many, many books that are filled with endless griping and grieving and criticizing, I've finally written one book which is actually hopeful. At the end of a very troubled century, a century which has given us concentration camps and genocide and ethnic cleansing and the balance of terror, something good has happened. More people are living longer. That's remarkable. This is the transition we're in, and it is a powerful one.

It is unstoppable. Try to think of some way to turn something like this around if you even wanted to. What could you suggest—that people volunteer to die

younger? That doctors stop doing what doctors do and we shut down the hospitals? Some people who are worried about this as a fiscal issue have suggested rationing healthcare to older people because they are too expensive to save. But I can't imagine anything like that ever happening, if for no better reason than as soon as we got close to it, you would find lawyers getting ready to sue any insurance company or hospital that decided to send home an old sick person on the grounds that his life wasn't worth saving. We won't do that. We will continue to keep people alive. Instead, we're going to be called upon to be more and more compassionate and patient and to put more and more of our time, our skill, our resources, our heart and soul into caring for older people. That will become our social style. We will become a compassionate society. We will do this because that's what all of us will want to have when we get there and need it.

There is another good thing: Wisdom. When we get older, we've taken some knocks in life and we're a little smarter. We've lived through some of the illusions and we've gotten wiser. One of the things that helps in that process has to do with the fact that more and more people are entering their senior years through a medical crisis that brings them very close to death. Ten years ago, I found myself living off of IV bottles for a month in the hospital. It was a near death experience, and it changed my life in a way nothing else could. It wasn't an experience filled with colored lights and visions or anything of that sort; it was just coming very close to death, and then coming back, and I said, "When I get through this, everything is going to change in my life."

Three years ago, my wife went through a similar experience; she had quadruple heart bypass surgery. She also came back saying, "My life has to change." An experience like that wakes you up, makes you more philosophical, and makes you review your values and your purposes. A lot of people entering their senior years are going to get there through this extraordinary experience that is like a rite of passage. Rites of passage are meant to escort people into a higher stage of experience. The wisdom that enters people's lives as they go through aging, suffering, the ordeal of ill health, the near-death experience, that's what I think a medical crisis brings about, and that's another aspect of what I'm calling the longevity revolution.

I suspect that what we are discovering may be the way the Earth itself responds to the pressures of industrial societies. People in their twenties and thirties haven't the time, by and large, but there comes a point when people get old enough to stop and ask, "What in God's name are we doing with this planet?" Maybe the longevity revolution is the Earth's own built-in compensatory fluctuation in the history of a high industrial society—the Earth finds a way to cut back on overpopulation, but she does more than that. She gives us the gift of long life, and as we come to appreciate that, our lives deepen and we become wiser.

I suggest in my book that we begin to think of what we're gaining from the longevity revolution as a resource: 10, 20, 30 years of life that we are reclaiming from death, the way the Dutch reclaim land from the sea. How shall we use that

resource? We have it; previous generations did not. We have this uniquely, from this time forward. Will we put it to good use? Will we make this a better and more compassionate world? That is what I propose in the book. And I think this is a great adventure in human culture.

If long life and good health are so obviously the true wealth of the nation, why is it so hard for us to see this? I think there's an answer to that question, especially here in America. Back in the 1940s, '50s, and '60s, when the baby boom was in process, we came to think of ourselves as a young society. The fertility rate through many of those years was higher than many third-world countries today. We got in the habit of believing that we were a young society, and that image got imbedded in our very powerful media.

The media in our society are still hung up on the idea, the image, the cult of youth. I think there are commercial reasons for this. They've learned that young people are gullible. They're the best target to go after if you're selling something. The target audience is 18 to 34, but that audience is not growing in size and it's not growing in wealth. The money and the numbers are up around the 50s and 60s, so why do the media cling to 18 to 34? Because those are the people who really believe there's a difference between Coke and Pepsi. So until the media recognize where the numbers are and where the money is, many Americans will have the feeling that aging is all wrong, bad, negative, costly, and to be avoided.

That may continue for another 10 or 20 years, but meanwhile, our society is going to get older and older and older. Eventually this will engender a very different set of images in our media, and also in our political life. We haven't yet adjusted to what this revolution is doing to us and to what it is giving us. But eventually we will, and when that happens, I think we're going to be in for one of the great adventures in human history, creating a society which finally realizes what is the true wealth of nations.

America the Wise by Theodore Roszak
Houghton Mifflin Co. New York, 1998. \$25.00.



A Sand County Almanac **The Environmental Work that Has Stood the Test of Time**

by **Donella Meadows**

In 1949, a small book was published shortly after its author, Aldo Leopold, died of a heart attack while fighting a forest fire near his homestead in rural Wisconsin. The book was a collection of his nature writings, crotchety writings, and lyrical writings. It offered praise for nature and manifestos for people from a man who spent his life in some of the wildest parts of America.

The title was *A Sand County Almanac*. The book was little noticed until 20 years later, during the environmental

awakening of the 1970s, when a paperback edition turned into a surprise best-seller. Now, 50 years later, the book is high on the most-beloved list of environmentalists, including me.

Leopold's way of seeing nature is etched into my brain. He taught me that whenever I cut through the growth rings of a tree, I'm sawing through history. "We cut 1906, when fires burned 17,000 acres in these sand counties; we cut 1905, when a great flight of goshawks came out of the North and ate up the local grouse. We cut 1902-3, a winter of bitter cold; 1901, which brought the most intense drought of record."

Whenever I see soil washing downstream, I think of Leopold's story of a molecule called X traveling through nature. "The break came when a bur-oak root nosed down a crack and began prying and sucking. In the flash of a century, the rock decayed, and X was pulled out and up into the world of living things. He helped build a flower, which became an acorn, which fattened a deer, which fed an Indian, all in a single year."

Finally, X ends up in a beaver, "an animal that always feeds higher than he dies. The beaver starved when his pond dried up. X rode the carcass down the spring freshet, losing more altitude each hour than heretofore in a century. He fed a crayfish, a coon, and then an Indian, who laid him down to his last sleep in a mound on the riverbank. One spring an oxbow caved the bank, and X lay again in his ancient prison, the sea."

That story conveys a strange ethic—help life hold precious nutrients by arranging to defecate and die higher than you feed

and live. But that's only part of Leopold's morality, which is firmly articulated in his most famous chapter, "The Land Ethic."

He starts with the legend of Odysseus returning from Troy and hanging his slaves. In ancient Greece, slaves were property, governed by expedience, not community, which was governed by respect toward equals, partners, brothers and sisters, extensions of ourselves.

Since then our ethical boundaries have enlarged to include slaves, women, children, people of other races and beliefs. It is time, says Leopold, to expand once again, to include "soils, waters, plants, and animals, or collectively: the land."

It is necessary to do this, not just because we love nature, but because we are connected with it. We eat from it, we drink from it, it is our life-support system. Caring for it is no different from caring for ourselves. "All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him to cooperate....A land ethic, then, reflects...a conviction of individual responsibility for the health of the land."

Then comes the thundering ethic, the most famous two sentences in the book. "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."

That idea is engraved in my soul. If we applied it, we would live in a healthier,

more beautiful, more bountiful world. We would stop whining about the inconvenience of the Endangered Species Act and see, as Leopold says, that “the last word in ignorance is the man who says of an animal or plant: ‘What good is it?’ If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.”

Leopold loved nature and loved people, too. He saw humans as the only creatures endowed with the capability for a land ethic. At a monument to the passenger pigeon, he gave a speech that was as much a tribute to us as to the pigeon: “We have erected a monument to commemorate the funeral of a species. It symbolizes our sorrow. We grieve because no living man will see again the on-rushing phalanx of victorious birds, sweeping a path for spring across the March skies, chasing the defeated winter from all the woods and prairies of Wisconsin.

“For one species to mourn the death of another is a new thing under the sun. The Cro-Magnon who slew the last mammoth thought only of steaks. The sportsman who shot the last pigeon thought only of his prowess. The sailor who clubbed the last auk thought of nothing at all. But we, who have lost our pigeons, mourn the loss. Had the funeral been ours, the pigeons would hardly have mourned us. In this fact, rather than in Mr. DuPont’s nylons or Mr. Vannevar Bush’s bombs,

lies objective evidence of our superiority over the beasts.

Not many books still ring true after 50 years, still teach the relevant lessons, and still inspire.

Donella H. Meadows, a systems analyst, author, director of the Sustainability Institute, and adjunct professor of environmental studies at Dartmouth College, writes a syndicated article each week to “present a global view, a connected view, a long-term view, an environmental and compassionate view.” Meadows can be reached at The Global Citizen, Box 58, Plainfield, NH 03781.



The Woman Who Wept

A Personal Perspective by Janet Boggia

I see her crying across the room, the tears could be held no longer. She is trying to blink them back, and I watch her pretending to read. Tears are not “professional,” and her embarrassment is acute. I pretend not to notice.

Did the others notice? The conversation moves on. I give a secret smile in her direction and my heart opens. I am filled with emotion, too, and my thoughts wander: *How new in the 15-billion-year story of this Universe is the event quietly occurring here in the long, narrow meeting room of a Tblisi hotel.*

What is new is a certain human response at particular nexus points—*conscious choice*. In the hotel meeting room in Tblisi, Republic of Georgia, we are in a dialogue among professionals who had originally agreed to meet to discuss “the image of the enemy.” This is the fourth dialogue in five years. All the women and men here are members of the intelligentsia, as European professionals call themselves. They are from two countries currently in a cease-fire stage of an eight-year war, Armenia and Azerbaijan. There are members of the group from a third entity, the enclave Karabakh, geographically located in Azerbaijan but with the majority population of Armenian origin. The independence of Karabakh is the point of contention in the ongoing war. Prior to the war there had been peaceful coexistence. During the war, all sides have applied “ethnic cleansing.”

It is the third day of dialogue; reports have been made, opinions have been expressed, feelings have flared, discussions have taken place. Progress since the first dialogue five years ago is evident—one side has allowed the other side to chair; there is less “speech-making”; the process has been taken over by the participants, rather than the third-party organizers. It is not perfect, but all have moved forward in spite of setbacks which in earlier dialogues would have brought the process to a standstill. Why does it occur to me that this is a spectacular phenomenon?—that the people in this room are living on the edge of evolution?

I am thinking of the history of our abundantly successful human species and the qualities that have made it so. I use

the word “successful” to acknowledge that the species has survived, and thrived, and spread all over the globe. Everyone over the age of 40 has seen the population double—we are now almost 6 billion in number. We have eliminated natural predators and we dominate the planet. Paradoxically, as a result of our success, we have begun to destroy the planet from which we emerged. Through our very success, we are destroying ourselves.

Another paradox is that evolution has given us the encoded impulses of “fight or flight” as our primary responses to trouble. Yet it has given us also the new tools of mind and consciousness. And this gives us the capacity that caused Svetlana to cry, the power that may help to save the planet after all.

Svetlana was crying because of a choice she made. She and Hagane, another participant, had become involved in a personal and heated exchange. Both made the choice not to strike back and continue the conflict.

Perhaps it was something the chair-woman said; perhaps it was the choice made by Hagane to speak quietly and not defensively; perhaps it was simply Svetlana’s insight—she made the shift within, and tears came. Between the two, compassion welled. Later that day, they moved their chairs next to each other and began planning a joint project.

The choice to shift from impulse to compassion made by these two individuals—enemies as defined by their politics, but not by their humanity—is the indication that the human species can adapt to the Earth as it is today; that it

can adapt its outdated and no longer functional operational modes.

When I ponder the vast history from the Big Bang to Homo sapiens sapiens—you and me—I am awed that all this has led to the new evolutionary capacities of choice and compassion. Svetlana and Hagane demonstrated the possibility. And so does every member of the dialogue group when they risk their lives and reputations in the effort to eliminate the “image of the enemy,” understand that they are connected, and join their efforts through compassion.

Janet Boggia, co-founder of Conflict Evolution Associates, spent 14 years developing and teaching courses and workshops in conflict transformation. As a member of the Armenia/Azerbaijan Initiative team, a joint project of the Foundation for Global Community and the Stanford Center on Conflict and Negotiation, she recently spent a month in the Transcaucasus helping facilitate dialogue among people from the two warring countries. Janet is now a full-time volunteer at the Foundation.



Imagine...the Earth in every classroom

“Once a photograph of Earth taken from the outside is available, an idea as powerful as any in history will let loose.”

--English astronomer Sir Fred Hoyle,
1948

Remember those pictures of George Washington and Abraham Lincoln that used to hang on the wall next to the clock in almost every classroom? Well, since 1990, a small team in Maryland has been working to put a picture of the Earth in every classroom in every school in Baltimore County and Baltimore City where it will remain from year to year, and from class to class. Now there are 6,513 pictures hanging in 192 schools in their area and in public school systems in other parts of Maryland. Some private schools have adopted similar programs.

Sue Garonzik, a member of the Earthome team which created the project, says, “Our children’s world is different from the one we grew up in, filled with challenges and exciting possibilities. We need to encourage an understanding of the inter-connectedness of our world. We need to prepare them for times in which there must be unprecedented global cooperation. As members of the human family, we are each an integral part of this delicate system. Our most critical challenge is to live in ways that preserve the planet’s capacity to sustain life for the generations to come.”

Presentation of the photographs has varied from school to school. Earthome volunteers have presented the photos as part of school assemblies and to a single class at a time. Other photographs have been given by environmental or science clubs to the science classes in their schools. With each picture, the classroom teacher receives a packet of information and activities. He or she then chooses the age-appropriate activities for that class.

The response has been enthusiastic and thoughtful from the outset. A Baltimore County principal wrote: "Each picture is displayed in a classroom where children can see our Earth, in space, as one living entity. As the children are exposed to that concept throughout their educational experience, they will grow to realize the oneness of our existence. The concept that you are promoting through your 'Earth in Every Classroom' project has been heartily endorsed by our entire faculty and staff."

One small child said, "I loved it. I just loved it. I loved all of it." A teacher commented, "I find that I refer to the picture even more than I thought I would. You know, a picture is worth a thousand words. And words can't describe the expression on the children's faces as they look at our beautiful Earth—they really get the big picture." Early in the project, one of the school superintendents said it well. "The photo is a symbol of our need for international cooperation, of our need for unity, and of our need to work together."

The Earthome team worked directly with PTAs, teachers, and school board officials. Some went to various businesses asking them to fund photos for the schools in their neighborhoods. The 16 x 20-inch photos bear only the NASA image of the full Earth on a black background, with no words or border. As the team says, "the image of the Earth speaks for itself."

If you'd like to undertake a similar project in your area, contact Earthome at (410) 592-6163 or write: Earthome, P.O. Box 20151, Baltimore, MD 21284.

For an "Earth in Every Classroom" project in Kamakura, Japan, see Timeline, July/August 1997.



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.

The Power of Collaboration

In Boston, a unique program of collaboration among police and probation departments, street workers, business organizations, health centers, schools, religious leaders, the mayor's office, and residents who are determined to own their own streets has helped to reduce shooting deaths of youth by 75 percent. Police Lt. Gary French notes, "People keep looking for one reason that the coalition is working here, but they miss the whole picture. They forget about the more than 900 crime watch groups, the health centers, the street workers, the property management companies, the DARE officers, the individual old ladies in the neighborhoods who take the kids in after school. There are all sorts of things working together." The change started in 1995 when a group of police officers, city officials, academics, and community representatives began meeting. Delegates began talking directly to gang members,

their families, friends and neighbors. It's an example of people in an American city actually taking the time to find out what they were dealing with, said a senior researcher at Harvard's John F. Kennedy School of Government.

Investing by Conscience

Investors who consider social values as well as returns are proliferating, according to a report in the New York Times. From mid-1995 to mid-1997, such assets under management grew 227 percent, to \$529 billion—almost three times faster than all assets under management. Steve Scheuth, president of the Social Investment Forum, said the trend has been aided by the mushrooming of choices. There are now 66 socially screened mutual funds tracked by Morningstar, Inc., the Chicago financial publisher, versus 12 in 1990. Criteria are proliferating, too. A few examples: some funds will not support military spending, one screens by the number of senior-executive women in a company, others eschew nuclear power or monitor contributions to political action committees, or recognize good employee relations.

The Courage to Be Sorry

During a visit by Korean President Kim Dae Jung, Japan's Prime Minister Keizo Obuchi offered a forthright apology to the Korean people for Japanese colonial occupation of the Korean Peninsula early in this century. The statement marked one more step toward Japanese public contrition for World War II. East Asia continues to be haunted by the war even after 57 years, and Koreans and Chinese in particular are deeply suspicious that

Japan might again become a military power. One South Korean newspaper called it a significant event; another said it had special meaning. President Kim Dae Jung responded to the Japanese parliament, saying, "Japan needs true courage to look at the past squarely and respect the judgment of history. South Korea should also rightly evaluate Japan, in all its changed aspects, and search with hope for future possibilities."

Holding on to Open Space

The land trust idea dates back decades, but the past ten years have seen remarkable growth in the amount of land that grass-roots groups have preserved. Since 1988, the amount of protected land has more than doubled from 2 million to 4.7 million acres—an area larger than Connecticut and Rhode Island. Increasingly, citizens without prior knowledge of how to preserve land by purchase, donation, and tax incentive are joining neighbors to do just that. People are seeing their open space disappear and are rushing to stop it, says Jean Hocker, president of the Land Trust Alliance, a national nonprofit organization. Run on shoestring budgets and relying on volunteers for staffing, for income, and for expertise in issues ranging from law to geology, these nonprofit groups have multiplied, growing from 743 ten years ago to 1,213 in 1998. A member of the Maine Heritage Land Trust points out that more community involvement and expression of community values are additional benefits of the citizen movement.

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.

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