The Land Report

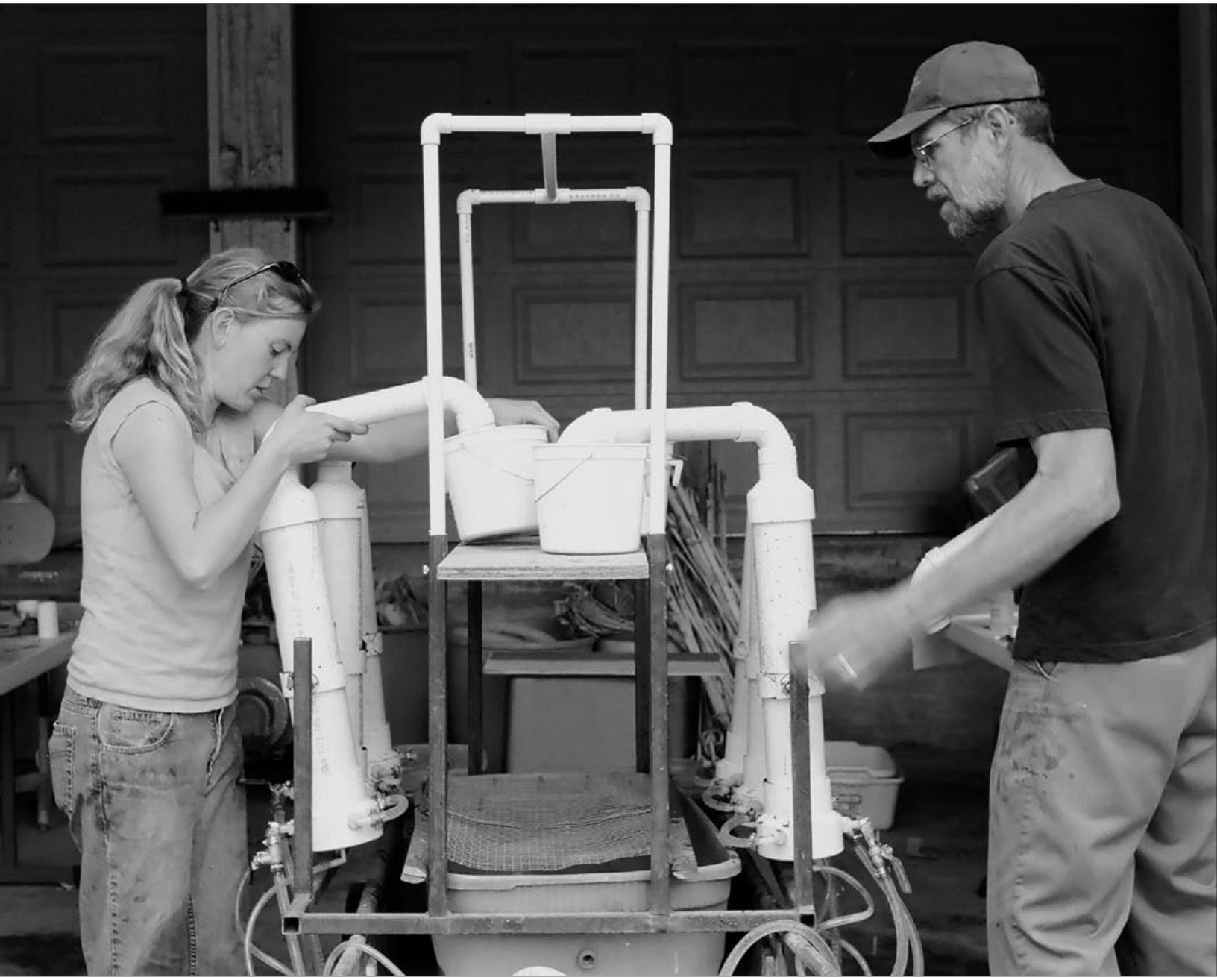
A publication of The Land Institute / Number 91 / Summer 2008

These Revolutionary Times

Bill Vitek

How to Be Hopeful

Barbara Kingsolver



The hydropneumatic root elutriator. In layman's terms: It gets the dirt out. Soil samples go in the vertical tubes. Turbulence from water jets and bubbling air at the base gently separates soil from even very small roots. Clean roots float to the top and wash onto a catchment screen. Pictured are the scientist behind the process, Land Institute graduate school fellow Tianna DuPont, and technician John Mai.

The soil came from native bottomland prairie that has been hayed but never plowed, from a neighboring field that's been in wheat for more than 75 years, and from no-till wheat ground that had been native prairie until 2004. Over years we're comparing how each treatment of the same kind of land affects it—things like soil organic matter, microorganisms and water-holding ability—and what it can produce. Despite a century without added fertilizer, the prairie's perennials often match the pampered wheat when compared by harvested nitrogen, a gauge for protein.

In the study by Tianna, a student at the University of California at Davis, half of each root sample will be dried, weighed and analyzed for nutrients. The other half will be dyed and photographically scanned. From that an imaging program will calculate total root length and surface area. Tianna expects that biomass alone is not a good gauge for what a plant can do with and for soil. Biomass tells us how much organic matter roots are contributing to soil, and nutrient analysis tells us how much nitrogen has been contributed. But diverse soil biological communities, essential for nutrient cycling, depend on highly active new roots and root hairs. Long, fine roots have larger surface area per mass, and more potential. Scott Bontz photo.

At the Land

Perennial Grain Breeding

We have made cookies, pancakes and muffins using flour from one of the perennials we're working with to make grain cropping more healthful to land. Now we know intermediate wheatgrass also is good for you. Lab tests of grain we grew found excellent nutrition values and other health benefits. Compared with wheat numbers from the Agriculture Department's database, wheatgrass had:

■ Almost 11 times as much folate, associated with prevention of stroke, cancer, heart disease and infertility, and for thinking among the elderly. Four ounces of wheatgrass flour would supply about 10 percent of the government's recommended daily allowance of folate for adults.

■ Almost three times as much vitamin B-6 and fiber—from four ounces of flour, respectively one-fourth and more than a third of the RDA.

■ About twice as much selenium, linked to reduced cancer incidence. Four ounces would meet the recommended minimum.

■ About half again as much protein and zinc—each about one-fourth of the RDA.

Among nutrients for which the government has yet to set allowances:

■ Three times as much lutein, an antioxidant that might slow development of cataracts, macular degeneration and cardiovascular disease.

■ Almost three times as much betaine, associated with liver and cardiovascular health.

■ About twice as much omega 3 fatty acids, considered important for treating or preventing cardiovascular disease, depression, arthritis, osteoporosis and diabetes.

■ Almost twice as much vitamin K.

Tests also showed that intermediate wheatgrass has a high total in antioxidants. Its only big shortfall among the more than two dozen nutrients tested for was in niacin, at less than one-fourth of the average for wheat.

We're both domesticating wheatgrass directly and crossing it and other perennials with wheat. Though most wheat hybrids raised in the greenhouse this year didn't make viable seed—a result to be expected in early stages of crossing species—we found a few plants that appear to be vigorous perennials with abundant seed of a size similar to wheat's. Breeder Lee DeHaan was pleased.

Lee began working with Purdue University's Bill Muir, an expert in breeding animals to be less competitive. Lee wants to breed wheatgrass to be less competitive with neighboring plants, so they don't waste energy on roots and height instead of making seeds.

Last winter was harsh for plants, but at least some offspring from every family of our most croplike perennial sorghum plants survived. Among them are many that promise to be better agriculturally than past survivors. In field trials over the past three years comparing families that survived the following winter with those that didn't, relative grain yields of the two groups ranged from a dead heat to a 20 percent advantage for the hardier families.

Chromosome analysis by Land Institute scientist Cindy Cox shows that there might be no serious obstacle in sorghum breeding to separate genes that affect perenniality from genes that give low grain production and other undesired traits.

Agroecology

A test at native prairie north of The Land Institute shows that in plots converted to no-till annual cropping four years ago, the mass of microbes in the upper 15 inches of soil has significantly declined. Although no-till farming helps conserve soil by reducing its disturbance, it depends on herbicides. And the roots of annual crops, even in the absence of tillage, do not provide as much energy-rich plant sugars for soil organisms as do perennials.

Graduate Fellows Program

Instead of hearing speakers as they usually do at a workshop in June, graduate school fellows whose work we fund teamed up for a week of research and writing. Our scientists took a dozen current and former fellows to a conference center in Stafford, Kansas, a secluded rural setting with a high-speed Internet connection.

They broke into four groups. One worked with our soil scientist, Jerry Glover, to compare hayed prairie with wheat fields and other farm treatments and learn how the prairie can, among other things, sustain productivity over decades without added fertilizers. The group began to sum up their findings for a paper to be published. The other three groups reviewed the field of existing papers that might apply to development of perennial grain cropping, and began to write summaries for science journals:

■ In collaboration with Prescott College professor Tim Crews: Strategies for nitrogen management in perennial grain systems.

■ Potential for plant species diversity at local, field and landscape scales to increase sustainability and productivity.

■ The importance of perennial plants in achieving sustainable food production.

We'll tell you when and where the papers make print.

Climate & Energy Project

Our work to connect climate and energy in people's minds is taking a leap of faith. We're starting the Kansas chapter of a program called Interfaith Power and Light, which helps religious congregations reduce their greenhouse gas emissions. Nationwide more than 4,000 churches,

synagogues and temples in 26 states have signed up.

Interfaith Power helps congregations conduct energy audits to see where they can cut emissions by improving efficiency of buildings. It also helps them find cleaner, renewable energy such as solar panels and wind turbines.

Congregations tend to be overlooked in funding for energy efficiency. "They're not a big company and they don't qualify for low-income home programs. They're caught in the middle and most are cash-strapped," the Climate & Energy Project's Eileen Horn said in a story distributed to newspapers by Harris News Service. "We're trying to connect them to resources so they can put their faith into action."

Interfaith Power also educates congregants about the moral and theological basis for being good stewards. And it helps congregations share information and work together on endeavors such as recycling drives, distribution of compact fluorescent light bulbs and adopting low-carbon diets.

Interfaith Power and Light is part of the Regeneration Project, a San Francisco-based effort to connect ecology and faith. If you'd like to connect your congregation with Interfaith, call 415-561-4891 or write to info@theregenerationproject.org. In Kansas contact Horn, at 913-708-3929 or horn@climateandenergy.org.

Publications

A picture of our soil scientist, Jerry Glover, is to appear in the "Inside Geographic" section of September's *National Geographic,* which features a story about soils. The photo shows Jerry in a trench, rinsing soil from roots for walk-in subterranean display. Before the *Geographic* went to press, accompanying text said, "He Knows All the Dirt: Land Institute scientist Jerry Glover shared his knowledge of soil, advised on the logistics of digging soil cuts with backhoes, helped photographer Jim Richardson shoot an Indiangrass plant's 10-foot roots (pictured in the feature), and was indispensible to this issue's soil story." Among the tidbits Jerry shared: Roots from an acre of prairie, if excavated and dried, would weigh as much as a school bus.

The Brazilian magazine *Globo Rural* interviewed plant breeder Stan Cox for a story about us in the April issue.

Presentations Made

Soil scientist Jerry Glover took to the field, for presentation and interview, a film crew making a documentary about soil. A major magazine, a movie: The forever neglected true staff of life finally will enjoy limelight, not just lime. And double-featuring: The following week Jerry and Wes Jackson addressed another crew trotting around the globe to make a documentary about soil. One production, *In Good Heart: Soil and the Mystery of Fertility*, is by director Deborah Koons Garcia and Lily Films, who together made *The Future of Food*. The other film is *Dirt! The Movie*, inspired by William Bryant Logan's book, *Dirt, The Ecstatic Skin of the Earth.* Logan and director Gene Rosow conducted the interviews.

Plant breeder Stan Cox talked about our work at Yale University and at a farming conference in Dubrovnik,

Solar panels are installed on the roof of the new food pantry at Village Presbyterian Church in Prairie Village, Kansas. The church hosts the Sustainable Sanctuary Coalition, 30 congregations working to be better stewards of the earth. Coalition members are key partners in the new, Kansas chapter of Interfaith Power and Light promoted by The Land Institute's Climate & Energy Project. Eileen Horn photo.

Croatia. Breeder Lee DeHaan represented us at Pitzer College in Claremont, California, and the University of California, Santa Barbara.

Cox and Jackson participated in a roundtable called "Surviving Climate Change: Producing Less and Enjoying it More," at Webster University in St. Louis. Jackson flew on to Washington, D.C., for a discussion called "People, Patterns and Philanthropy in Rural America."

Presentations Scheduled
August 5, Winona, Minnesota.
August 15, Chautauqua, New York.
August 30, San Francisco.
September 5, Portland, Oregon.
October 6, Edmonton, Alberta.
October 30, Anderson, South Carolina.
November 20, Wichita, Kansas.
February 27, Albuquerque, New Mexico.

For more, call or see Calendar or landinstitute.org.

Eulah Laucks, 1909-2008
Eulah Laucks, who thrived on intellectual life and served on The Land Institute's board of directors for eight years, died June 3. She was 98.

"Incredibly progressive, strong-willed and independent" is how Rep. Lois Capps of California described Eulah, her friend and mentor, in the *Congressional Record*.

Land Institute President Wes Jackson said, "I met her at a conference in Santa Barbara. We hit it off. I was immediately struck by the wealth of her knowledge, her no-nonsense approach to the world. Much later I learned she was a woman of some financial means, which she generously shared with numerous causes. She joined our board, where her wisdom combined with smarts always caused pause for her fellow board members, which often took the discussion in a corrective direction."

Author and farmer Michael Ableman met Eulah at The Land Institute though both had lived in the Santa Barbara, California, area for years. He said it was like rediscovering a lost friend. Ableman wrote in an appreciation for the *Santa Barbara Independent*: "Well past her 70s, into her 80s, and even into her early 90s, Eulah was a living testimony to the idea that age is only a number. It wasn't that her body did not register the years, it's just that she never carried herself as if she was 'old.' There was never any sense of resignation or decline, only an energy and bounce that lifted everyone she connected with."

Eulah Croson was born in Goldhill, Nevada. Eighty-seven years later she published a book about her childhood there, *Saucer Eyes: A Story of Becoming in Hard Rock Mining Country.* An older sister who tired of tending her intended "saucer eyes" as insult.

After high school Eulah worked for six years at a tuberculosis sanatorium to pay for college. She majored in journalism at the University of Washington, and for her senior year persuaded the school to let her visit Europe, before study abroad became common, especially for women. She was based in Rome, heard Mussolini speak, aimed to be a foreign correspondent. But Laucks came home after urging from her American educators, who were concerned about impending war.


Eulah Laucks

In 1942 she married Irving Laucks, whom she met while working in the public relations department of his chemical products company in Seattle. At the time of the Cuban missile crisis, Irving expected nuclear war and moved the family to places he considered safest: Mexico, Australia, Hawaii. They finally settled in Santa Barbara, drawn by the Center for the Study of Democratic Institutions. Irving worked there briefly as a consultant. Eulah served on the board of directors for two decades. The center was a sounding board for scientific, artistic, philosophical and political intellectuals. Eulah's daughter, Mary Laucks, currently on The Land Institute board, said, "This was something tailor-made for her."

Eulah met and befriended people including philosopher, critic and renegade priest Ivan Illich, social activist Dorothy Day and spiritual writer Thomas Merton. She met Illich in Mexico by volunteering to type for him at his Intercultural Documentation Center, which behind the front of teaching language aimed to thwart the Vatican's hand in industrializing subsistence countries.

Eulah and Irving gave such thinkers a voice through the newsletter of their Laucks Foundation, which funded social and ecological work, and which Mary and her husband, Brian Swanson, continue.

At 69, Eulah earned a doctorate in interdisciplinary study of religion, sociology and history. Her thesis became a book about contemporary attitudes toward children, *The Meaning of Children*.

Until she was 90, Eulah served on The Land Institute's board and in Santa Barbara was active in groups including the Community Environmental Council, Channel City Women's Forum and a scholarship committee for the University of California. After that, she lived with Mary and Brian in Washington state and British Columbia. Mary said Eulah kept her own income tax records until she was 95, and remained sharp until her birthday last October.

Strachan Donnelley, 1942-2008
Strachan Donnelley, a great friend of The Land Institute and one of its board members, died of stomach cancer July 12, shortly before this magazine went to press. The fall issue will carry an appreciation.

Prairie Festival Recordings

September 28-30, 2007, The Land Institute

Quantity	Price	Title	Speakers
_____	$10	The Tomorrow Show	Land Institute research staff
_____	$15	Energy Conservation and the Climate and Energy Project (2 CD set)	Nancy Jackson, Scott Allegrucci, Pete Ferrell, Blair Hamilton
_____	$10	The Long Emergency	James Howard Kunstler
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_____	$10	Changing Landscapes: Agriculture in the Climate and Energy Project	Fred Kirschenmann
_____	$10	Another Look at Ethanol	Bruce Babbitt
_____	$10	Where are We Now?	Wes Jackson
_____	$70	Complete set	

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Teach us that the work that matters does not always show.
—Pual Gruchow, *Grass Roots: The Universe of Home*

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Cover: Moonrise over hay bales at sunset in north-central Kansas, near the geographic center of the contiguous United States. Scott Bontz photo.

The Land Institute Mission Statement

When people, land and community are as one, all three members prosper; when they relate not as members but as competing interests, all three are exploited. By consulting nature as the source and measure of that membership, The Land Institute seeks to develop an agriculture that will save soil from being lost or poisoned, while promoting a community life at once prosperous and enduring.

2440 E. Water Well Road
Salina, KS 67401
Phone: 785-823-5376
Fax: 785-823-8728
theland@landinstitute.org
www.landinstitute.org

Want to share a story from *The Land Report*? Unless the writer objects, you may photocopy from the magazine or get the piece by e-mail. Write to Scott at bontz@landinstitute.org or our street address in the column at right, or call him at 785-823-5376.

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Hard Earth, High Water

This spring, 15 years after the disastrous 1993 inundation of the upper Midwest, much of Iowa had a second "500-year" flood. Following are thoughts from Iowans who don't think the blame lies only on heavy rain.

Kamyar Enshayan

As I sandbagged with hundreds of other people to protect downtown Cedar Falls, I made a list in my head of policies and practices that have helped intensify the catastrophic flood experienced in most of eastern Iowa.

The damage to individuals and municipal, county and state infrastructure is immense. If we talk of rebuilding, we ought to honestly assess what has happened here and what will significantly lessen effects of future floods.

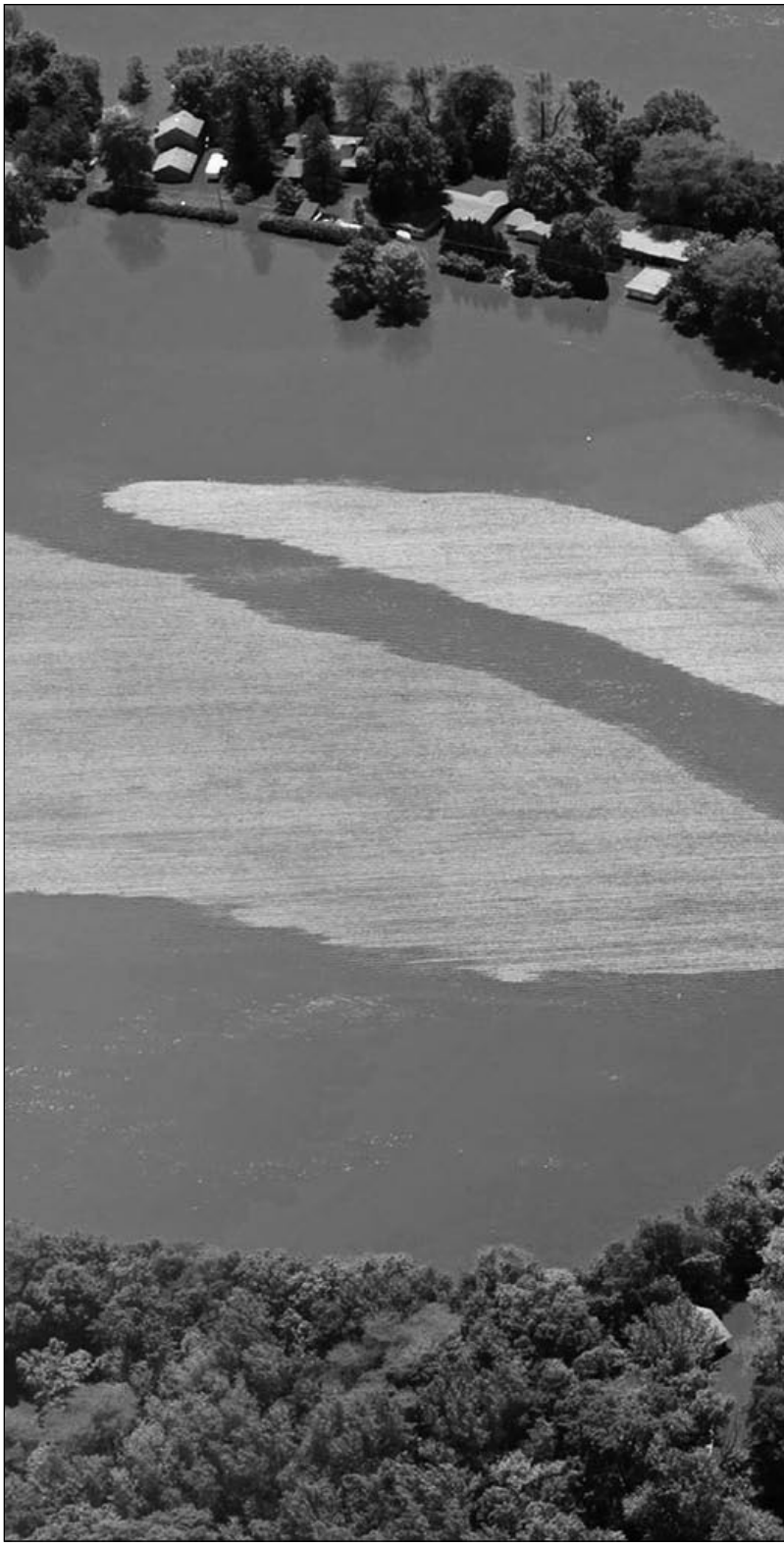
Let's start where the rain lands. Solid Iowa State University agronomic studies tell us that four-year crop rotations featuring pastures and cover crops build soil organic matter and improve tilth. These lands can better absorb, store and slowly release rainfall.

Yet federal policies continue to ignore and discourage sound agronomy in favor of simplified systems—alternating corn and soybeans or even planting corn year after year—which leads to soil degradation, more runoff, more laying of subsurface tiles for drainage, and a host of other troubles on the farm and downstream. (I am not blaming farmers, who struggle to make a living in global markets controlled by distant grain merchants. I am simply describing the policies that have led to the situation.)

The runoff from fields then enters waterways. Over the past several decades, federal, state and local policies have allowed us to chip away or destroy landscape elements that acted as sponges, absorbing and slowly releasing rainfall. Swamps, marshes, bogs, fens and many other forms of wetlands, as well as riparian habitats, were seen as useless.

Floods from intense storms are normal, but they become so-called natural disasters when we ignore basic ecological processes of the river and its home—the floodplain. Floodplains provide vital biological and water quality services locally and downstream, all for free. Floodplains are not idle pieces of land waiting to be developed.

But city councils and county governments routinely grant permits to fill and build there. Then, by application to the Federal Emergency Management Agency, the land is "removed from the floodplain." In Cedar Falls, I can show you brand new homes that were built in the floodplain on fill with 1 foot over the 100-year flood level, and ended up with 4 feet of water in their living room. Building in floodplains exacerbates flooding, degrades water quality and costs us in emergency services, utility repairs, lost business, property damage and cleanup. Taxpayers pay the bill.



At Cedar Falls, Iowa, in June, the Cedar River crested 6 feet higher than 11 feet. In front of these marooned houses at Cedar Falls, beyond the

the previous flood record. The National Weather Service said that downstream at Cedar Rapids, the river busted the record by impermeable pavement: annual row cropping, which further cuts the land's ability to soak up rain. Denny Mills photo.

With a warmer planet forecast to bring more intense storms in our region, it seems prudent to invest our creativity and public resources in restoring ecological functions to Iowa's landscape.

Imagine if the cities and counties in the Cedar River watershed pooled some of their infrastructure rebuilding funds—matched by the federal and state governments—and then went up and down the watershed buying land for wetland restoration and easements for river and stream buffers, and providing incentives for farming that features perennial soil cover and more soil organic matter. All of these combined would add resilience to the watershed and significantly reduce flood effects. More and taller levies will not solve the root problem.

In Europe, after severe flooding along the Rhine River, the Dutch government developed a "more room for the river" policy. Once we see land use from a water viewpoint—thinking like a river—then we are likely to arrive at sound solutions. In the United States, the Association of State Floodplain Managers has developed "No Adverse Impact Floodplain Management," which offers a blueprint for integrated floodplain management.

Translating the Golden Rule into a basic principle of watershed management would be, as writer Wendell Berry puts it, "Do unto those downstream as you would have those upstream do unto you." To protect all of us, the state of Iowa needs a coherent and well-coordinated watershed management plan. And federal government must provide incentives for land stewardship rather than corn acres.

As we were sandbagging, I was touched by how much people cared about our community and for this place. That's the patriotism I relate to. Our rivers, streams, floodplains and wetlands are Iowa's vital assets and local treasures. They need to be treated that way, for our community and its economic well-being. They are in part what the flag stands for.

Enshayan teaches at the University of Northern Iowa and is a Cedar Falls city councilman.

Francis Thicke

Clearly, continuous row cropping is a major cause of flooding in Iowa. When I drive around my neighborhood after a 2-inch rainfall it looks like most of the water has run off—even in the no-till fields—and the erosion is extensive.

Studies have shown that native prairie soils can absorb 7 inches of rainfall per hour. A well-managed perennial forage pasture should do about as well.

My brother has a grazing dairy in southeast Minnesota. At a field day on his farm, the Natural Resources Conservation Service used a rain simulator to put 4 inches on his hill pastures in one hour. No water ran off. They waited four hours and applied 4 more inches in an hour, and still no water ran off. Last fall when the big floods came to southeast Minnesota my brother got 15 inches of rain overnight. Row crop fields were destroyed by erosion, and whole towns got washed out. On my brother's farm there was virtually no sign of erosion. The pond at the bottom of his steep hilly pastures did not even get full.

The slow absorption rate of soils under continuous row cropping of corn and soybeans, and tile drains under the surface to get the water off fields as fast as possible—these should get major credit for the flood of '08.

Which brings up two questions: 1) How profitable will Iowa's corn and soybean crops be in comparison to the billions of dollars of Iowa flood damage? 2) How much would flooding be reduced if 25 percent or more of Iowa's cropland were converted to perennial forages that could absorb 5 to 7 inches of rainfall per hour—such as prairie grasses for ethanol, and grass-based livestock?

Thicke is a soil scientist and organic, grass-based dairy farmer near Fairfield.

Steve Smith

Even my dad, a "tile every damp spot and plant every inch" kind of guy, has commented on the contribution of expanded tiling to the rapid rise of rivers and streams this spring. Dad's been tiling areas that never were historically trouble spots, but have become "wet" in recent years.

Our farm has been in mixed forages and tallgrass prairie for grazing going on seven years. We increased organic matter from 1.5 percent when we started to 3.25 percent two years ago. We had 4- and 5-inch rains and water over the road off the neighbor's fields six times this spring. Most rain on our farm never made it to the boundaries, but gradually soaked in. Amazing, since this farm is ringed with old gullies filled with Buick and Chevy carcasses for "erosion control" by the previous owner. The Natural Resources Conservation Service estimates 150,000 acres in Marshall County—almost half of the farmland—had severe erosion this spring, with 10,000 to 15,000 acres flooded. Breaks your heart to see all that soil and its nutrients move.

Smith farms at Marshalltown.

Dennis Keeney

Iowa and most of Midwest agriculture have evolved doing what they do best: Grow corn and soybeans. In Iowa, we do this to the extreme. More than 92 percent of Iowa is in farms and 73 percent in corn and soybeans combined. It is the most human-altered state in the union, and near the bottom of the list for biodiversity and water quality. Around corn and soybeans revolve much of our industry: crop breeding, seed production and sales, farm machinery manufacture and sales, railroads, grain handling, and now ethanol and biodiesel.

When the weather goes foul, as it has this year, and as it has done as recently as 1987-88 and 1993, the state economy nosedives. Water quality, soil erosion, rural communities—everything associated with our undiversified farm economy suffers.

The intense rains this year came when crops were small and the soil lay bare. Making matters worse, more than 100,000 acres of Conservation Reserve Program land, which pays farmers to keep perennial cover, had been planted back to corn, and in anticipation of high grain prices, more fertilizer than ever went on the land—fertilizer now headed down the Mississippi.

It is time to remodel our agriculture. Make it green. Instead of paying for re-establishing row crops, let's put perennials in erosion-prone areas, plant trees in riparian zones and for windbreaks, rotate crops between longer-lasting legumes and row crops. And insist that more, rather than less, land goes into conservation reserve. Rural communities will thrive and Iowa will be known as the Green State instead of the Flood Bowl.

Like the orange sign blocking entrance to Vandalia said June 6, there is WATER OVER ROAD. Policy makes a roadblock that hinders true diversity and progress in Iowa.

Natural disasters will happen again, and yet again. But a diverse, resilient state will weather these storms.

Keeney, of Ames, is a senior fellow for the Institute for Agriculture and Trade Policy.

Talking Myself to Sleep at One More Hilton

John Ciardi

I have a country but no town.
Home ran away from me. My trees
ripped up their white roots and lay down.
Bulldozers cut my lawn. All these
are data toward some sentiment
like money: God knows where it went.

There was a house as sure as time.
Sure as my father's name and grave.
Sure as trees for me to climb.
Sure as behave and misbehave.
Sure as lamb stew. Sure as sin.
As warts. As games. As a scraped shin.

There was a house, a chicken run,
a garden, guilt, a rocking chair.
I had six dogs and every one
was killed in traffic. I knew where
their bones were once. Now I'm not sure.
Roses used them for manure.

There was a house early and late.
One day there came an overpass.
It snatched the stew right off my plate.
It snatched the plate. A whiff of gas
blew up the house like a freak wind.
I wonder if I really mind.

My father died. My father's house
fell out of any real estate.
My dogs lie buried where time was
when time still flowed, where now a slate
stiff river loops, called Exit Nine.
Why should I mind? It isn't mine.

I have the way I think I live.
The doors of my expense account
open like arms when I arrive.
There is no cloud I cannot mount
and sip good bourbon as I ride.
My father's house is Hilton-wide.

What are old dog bones? Were my trees
still standing would I really care?
What's the right name for this disease
of wishing they might still be there
if I went back, though I will not
and never meant to? —Smash the pot,

knock in the windows, blow the doors.
I am not and mean not to be
what I was once. I have two shores
five hours apart, soon to be three.
And home is anywhere between.
Sure as the airport limousine,

sure as credit, sure as a drink,
as the best steak you ever had,
as thinking—when there's time to think—
it's good enough. At least not bad.
Better than dog bones and lamb stew.
It does. Or it will have to do.

Air Tractor. Blair E. Kooistra photo.

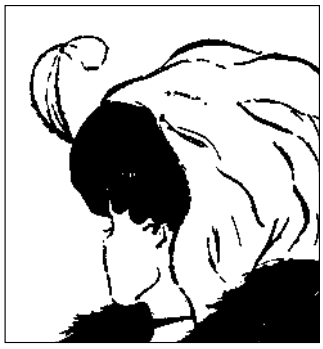
These Revolutionary Times

Bill Vitek

The language of revolution should be used as a last resort and against odds that can be beaten only with radical thought and action. It requires justification or, at the very least, explanation.

The reader should understand that I am not prone to tirades or behaviors that could be described as radical. I have never participated in a public protest, and refuse to sign most petitions. In the classroom I offer both sides of a position and try to avoid showing my hand. I avoid confrontations and by disposition am a peacemaker—or, depending on one's perspective, a wimp. I have a stable job, a long-term relationship and four children. I hope to someday spend the money collecting in my retirement account. In British America in 1775 I most certainly would have been a loyalist. More likely I would have never left England in the first place.

But something happened this year. Imagine one of those ambiguous figures —the vase or the two faces, the young or the old woman, the duck or the rabbit—and our ability to switch images with little or no difficulty, one or the other, back and forth, back and forth. Now imagine suddenly being able to see only one image.



Perhaps it was triggered by feelings of ineffectiveness and frustration. As an applied or practical philosopher—I know that sounds like an oxymoron—I avoid the dusty attic of our civilization's past and prefer instead to spend time down in the basement where, like the basements of our own homes, all of the social, political and technological systems and foundations are located, and operate—or fail to operate—without our notice until it's rather late. I've been down there now for two decades, and it seems to me that things are only getting worse, and ever more quickly.

I am also writing a book about the daunting social and cultural challenges we face in a world with too little carbon below the ground—in the form of oil and natural gas—and

too much in the atmosphere—in the form of greenhouse gases, including carbon dioxide and methane. "Post-carbon" and "peak-carbon" are terms reflecting trends and discoveries that indicate the modern world will need to learn how to live without the vast pools of carbon energy that built and run it, and for which there is no equal. I live day-to-day with the exponential data of our times, and they have made me a student of the boundaries and limits of both living Earth and our human form.

And I just turned 50.

The birthday, the book and the frustration seem to have triggered a midlife crisis of the metaphysical sort that is probably not uncommon for philosophers. I have come to a perspective reluctantly, but of which I am now convinced and to which I am fully committed.

We are living in revolutionary times!

I wish I could tell you that I was just exaggerating to focus your attention. My high school chemistry teacher, Mr. Rizzo, would frequently tell us that we were the worst class he ever had. He finally admitted that to motivate students he told every class, every year, that they were the worst he ever had. But, he added, our class really was the worst.

Like Mr. Rizzo, I believe that we really do face a challenge that will be transformative. Most of us are familiar with the phrase "up a creek without a paddle." (The phrase is actually a bit more colorful than that.) I think the world and its inhabitants are up a creek—a post-carbon creek—*with* a paddle, the one that put us there in the first place. The paddle is the mindset of limitless expansion and consumption. This mindset won't get us out of our predicament, and it actually makes matters worse. Meanwhile our boat—the living ark of Earth—is listing terribly.

What we must do instead is toss the paddle and begin to change our minds, our worldview and our everyday lives. We must learn how to function not just as individuals, but as whole civilizations, on the only Earth we will ever know, a living, complex and interconnected sun-powered ecosphere, complete with all of its, and our, limitations. This change of mind is not just a conceptual revolution: We would be naive to think it will happen without a good deal of active resistance and protest. It also likely will require change to a way of life as inconceivable to us as the invention of the modern factory or a heart transplant would have seemed to a peasant or professor in medieval Europe. The good news, if I can describe it that way, is that only by accepting this challenge in radical and revolutionary terms will our odds of success change from "fuggedaboutit!" to "long shot."

Soon after that radical declaration in July of 1776, Richard Price, a British Unitarian minister, called the American Revolution the most important event in the history of the world since the birth of Christ. I believe that the revolution of our time is the most important event since the invention of agriculture nearly 12,000 years ago. Those first farmers in the Middle East's Fertile Crescent began a mining operation that continues to this day: the mining of high-energy carbon. In breaking the sod those early farmers were breaking from nature, living by their own wits, and appearing—at least temporarily—to exceed the boundaries and limitations that govern all life, and Earth itself.

This story of the human break from nature is very familiar to us. In Genesis, Eve and Adam are tempted by a "tree" that, some scholars say, was not a tree at all, but rather a grass: wheat, one of the first wild grasses to be cultivated. Scholars also point out that the first farmers used snakes to guard granaries against rodents. The temptation that the serpent and wheat grass first presented to Eve, a name that means life, was for a more secure and plentiful life outside of nature's boundaries. And why wouldn't the first woman, and soon-to-be first mother, want agriculture's promise of plentiful food and security for her offspring, even if it meant, as the story tells us, more work for her husband and increased pain during childbirth for her and all women, no doubt a consequence of more and healthier, larger, babies?

We are told that the human couple was expelled from nature's garden, but it seems more likely that they left on their own accord—the original sin of willfulness—once they recognized their own powers to cultivate a grass that even today is the world's second largest cereal crop. More important, I think, is the warning they ignored about the danger of succumbing to this temptation to live outside of nature's boundaries—namely, that they "would surely die."

Despite that ominous warning, Adam and Eve and their offspring never looked back. The soil of the Fertile Crescent was the first carbon pool to be tapped, and, as William Ruddiman writes in *Plows, Plagues and Petroleum: How Humans Took Control of the Climate*, it brought with it the first increases in human population *and* greenhouse gases—carbon dioxide and methane—released by the clearing of forests, biomass burning and irrigation, all common practices as early as 7,000 years ago.

The second high-energy pool, the stored carbon of Earth's forests, furthered human dominance of the world and made the bronze and iron ages possible. Wood was the primary fuel for the first 150 years of European settlement in North America.

The third carbon pool—coal—fired the industrial revolution and exponential growth of the human population. It remains a critical source of energy. In 2004 the world used over 6 billion tons, and by 2030 the demand is projected to be almost 11 billion tons.

Oil and natural gas are our most recently tapped carbon pools, and together they fuel the global economy. The world consumes 85 million barrels a day, and demand is expected to grow to 113 million barrels by 2020. The world used 100 trillion cubic feet of natural gas in 2004, and is expected to need 150 trillion cubic feet by 2020.

Soils, forests, coal, oil and natural gas: These are the primary feedstocks of our modern civilization. And for those of us who have been alive these past 50 years in industrialized societies, particularly in America, it has been a wonderful ride, an amazing and blazing run on the carbon bank.

But as the data continue to come in, it appears that the processes driving our exponential growth may be at their peaks. Our parents' generation rode this exponential wave to the top, and it looks like ours is the first generation to live with the effects of what Wes Jackson calls "The Age of Rapid Depletion." Our carbon pools are drying up. Our carbon sinks are clogged. And we are told to expect at least 3 billion more human inhabitants in the next 40 years. Indeed, the warning in Genesis to avoid the temptation of a boundless self-sufficiency lest we surely die remains relevant today.

"Yes, but isn't revolution too much?" you say. "Why a change so radical? Who wants to take that risk?" Thomas Paine, in his pamphlet *Common Sense*, recognized this reluctance when he said that "until independence is declared, the continent will feel itself like a man who continues putting off some unpleasant business from day to day, yet knows it must be done, hates to set about it, wishes it over, and is continually haunted with the thoughts of its necessity." In our own time it is fair to ask why a revolution is necessary when we have progress, increased technological efficiency and the organic, environmental and sustainability movements to help with the change ahead.

Here's why.

What we commonly call progress has produced some of the very problems we expect progress to solve. Advances in agriculture and medicine have led to the exponential population growth, further stressing soil and water. Technological optimists promise solutions from greater efficiency, but efficiency has led to higher consumption and depletion of fossil fuels, and more atmospheric carbon. This is Jevons' Paradox, named after the man who showed that as 19th century Great Britain became more efficient with coal, it consumed more of it. Even if every car in the world was a hybrid, and every light bulb a compact fluorescent or LED, growing demand for cars and light bulbs would dwarf savings. And new forms of energy will take time to develop. The late Cornell physicist and Nobel laureate Hans Bethe noted that no form of energy, from the draft horse to coal to petroleum to atomic power, ever became a fuel for commonplace technology in less than 50 years.

Sustainability, now practically a household term, is starting to set things right with a path toward living well in a limited world. But in current form this movement doesn't require enough from us. It is too laden with a near fundamentalist belief in technological fixes, and stuck in old "the-Earth-is-a-machine" thinking. The problems it solves are inside the invisible cultural and social systems—the "isms"—that shape how we see the world and think about it, and that are rarely challenged except in times of social upheaval. These larger systems are off the sustainability table. Corporate giants Toyota, General Electric and Wal-Mart, for example, are touted for their eco-efficiency initiatives, but their profit motives and their use of advertising to increase consumption of their products are rarely questioned. Al Gore's Nashville home is carbon neutral, but it's also 10,000 square feet, sending the mixed message that extravagance can be sustainable. Without addressing deep structural changes in the larger systems, sustainability is like making one's first-class cabin on the Titanic watertight while the hallway begins to flood. It might seem prudent at the time, but if the tear in the ship's fabric is big enough and if the rivets are substandard—as historians now confirm—you will still end up at the bottom of the North Atlantic.

Sustainability itself is a tad presumptuous. The wise ones—*Homo sapiens*—have for 12,000 years whittled away at Earth's vital and sustainable forces, mistaking human cleverness for nature's creativity, and now insist that what the ecosphere has been providing all along is actually their job, that the great consumers of Earth can now become its benefactors without sacrifice of their high living standard. If Earth had eyes they would be rolling.

Central to the problems we face is our reluctance to see them as anything more than temporary downturns in the usual up and down cycles of economics and climate. They are not. World production of oil in the past three years has remained steady—85 million barrels per day—while the price has more than doubled in that time, and in early July had reached as high as $145 per barrel. A human slave, on the other hand—of which there are now approximately 27 million in the world, more than at any other time in history—can be purchased for a mere $40. Add another 3 billion people to the planet in 40 years while simultaneously trying to cut carbon dioxide emissions by 80 percent. Find livelihoods, food, fresh water and shelter, as well as education, health care and stable governments for these numbers without causing species extinction, soil degradation, civil wars, nuclear wars and mass migrations. Try running any of the world's major cities—their subways, waste water plants, transportation, lighting and heating—for even a few days on low density solar and wind power.

These facts and challenges blocked the switching mechanism that I discussed earlier in the essay, the one that allowed me to see both the radical and the status quo paths before us—the old woman and her young counterpart—with equal ease. I can no longer see the slower, tinkering-inside-the-paradigm option as anything more than a creative and attractive but delusional refusal to admit the enormity of the challenges before us.

It is time to be more truthful with our language.

We live in revolutionary times brought by substantial and sustained failures of current worldviews and global systems to provide everyday people with lives of health and

freedom from want and fear, and with prospect of similar lives for their children. These failures are the self-evident truths of our time: that billions were promised improved lives only to see them degraded; mass extinctions of species; overheated climate; and unprecedented running down of the ecosphere on which all life depends.

The worldviews and systems responsible for these failures go by many names: individualism, capitalism, scientism, materialism, corporatism and globalism, to name a few. What they are called is not important. Important is that they share two bedrock beliefs that have become the intellectual DNA of our modern minds: first, that the natural world is without limit in energy and materials, and its sinks for wastes and pollution; and second, that the human intellect is sufficient to understand, control and operate Earth as a luxury-machine for the exclusive material happiness of human beings, again, without limit.

It is now necessary to overturn these false and dangerous beliefs, to limit the power of their many adherents, and to usher in a new way of thinking and living in the world. This is our revolutionary moment.

In such times we must refuse and reject attempts by the current systems and their defenders to make accommodations, reconciliations, excuses and minor concessions. The current systems can neither fix the problems they have created nor be made compatible with the emerging ecospheric perspective, any more than the British monarch could have been made compatible with independence-minded Colonial Americans, or medieval scriptural authority with 17th century scientific discoveries.

In such times we must recognize the signs of seismic social and cultural shifts that are under way, and engage fully our talents to bring forth an alternative worldview, a new Enlightenment that values the ecosphere, protects human freedom and dignity, and rejects the belief that we can master Earth and treat it as our supermarket, playground, laboratory and dumpster.

We must live every day with, and deliver to others, the uncomfortable and terrifying facts about the failure of the current worldview to solve its own problems, and we must close off the usual psychological escape routes that keep too many of us in complacency.

In these revolutionary times we must organize and mobilize the likeminded at the "street" level—that is, at the level of action and application appropriate to one's station in life. Such actions would include teach-ins, protests, boycotts, street corner pamphleteering and blogging, bringing the revolutionary message to every family reunion we attend and every board and committee on which we sit, and insisting that our elected officials, corporate executives and educational administrators confront the real problems of our time.

Active engagement and resistance does not have to be violent, but it must be as single-minded and insistent as someone yelling, "Fire!" in a crowded theater when there is, in fact, a fire. That's not radical, that's prudent *and* morally required. As Frederick Douglas said, "Power concedes nothing without a demand. It never did and it never will. If there is no struggle, there is no progress. Those who profess to favor freedom, and deprecate agitation, are men who want crops without plowing up the ground, and rain without thunder and lightning. They want the ocean without the awful roar of its many waters."

We can make demands and resist without being rude or loud or violent; we can choose the path and tools that are most effective given our talents and dispositions. For example, I don't stand up at public meetings and talk about revolution. But when I have been invited to speak to an audience this past year, I've made it clear that I'm only giving one talk these days: the one that you are reading now. I've been able to bring the revolutionary message to college students, church congregations, local government officials and even the New York Society of Professional Engineers' annual convention. And while I praise the good intentions of individual and institutional efforts to become more sustainable, I end my praise with, "But it's not enough." I try to inject humor and levity when it can defuse tension without belittling the seriousness of the problems we face. And I'm putting the tools of philosophy to work on reconstructing our cultural and social systems to operate in an ecosphere.

To state unequivocally, "These are revolutionary times!" is recognition that the world is changing in ways that we would not necessarily choose; that it must change even if it goes against what we would otherwise choose; and that we can no longer choose to resist it.

It is so much easier to hope for a miracle. But our best and most realistic hope lies in embracing the revolution before us. With vigor and creativity we must help create the conceptual scaffolding necessary to build a new worldview—in the words of the American founder John Adams, "to start some new thinking that will surprise the world." Every category of human thought needs reorientation to recognize the boundaries of our sun-powered ecosphere. We need ecospheric science, spirituality and economics, ecospheric politics, education and technology, ecospheric justice, history and architecture, ecospheric engineering, agriculture and philosophy, and ecospheric conceptions of rights, property and happiness. Here's a rough draft of our ecospheric "to-do" list.

■ Reduce the industrialized world's carbon footprint 80 percent by 2050.

■ Reduce human population 80 percent from its current level without famine, war, viruses or the loss of human dignity by 2110.

■ Eliminate the automobile as a form of personal transportation.

■ Create political and social systems that run on a solar economy.

■ Revise the scientific method so that it more

accurately balances the goal of discovery with moral considerations and precaution.

■ Devise viable models of happiness and success that do not require economic growth and increased consumption.

■ Make the virtues of humility, cooperation, generosity, gratitude, kindness and thrift cool again, or hip, or bad, or the bomb, or whatever word or phrase you use to describe something really good and worth having.

This is the century where we get a couple of chances to move from the age of rapid depletion to something less rapid and less depleting. Ready or not, we will be carried as in a river overflowing with spring thaw. We will steer our lives and cultures at first with more hope than effectiveness, and with much fret and worry. We should consider it an exciting time, filled with opportunities to think big thoughts and to imagine wonderful alternatives; to help create a worldview where humans can feel at home on a planet that is very much alive, interconnected, filled with morally valuable species and with precious limit to how much it can provide; where human ignorance—Stan Rowe's *Homo ignoramus*—about our living Earth will always exceed our knowledge; and where our curiosity promotes understanding—not subjugation—of Earth's complexity, beauty and resilience.

It's time to accept the creative limits and boundaries that gave us the universe and the sun-powered Earth in the first place. As T. S. Eliot said in *Little Gidding*, "The fire and the rose are one."

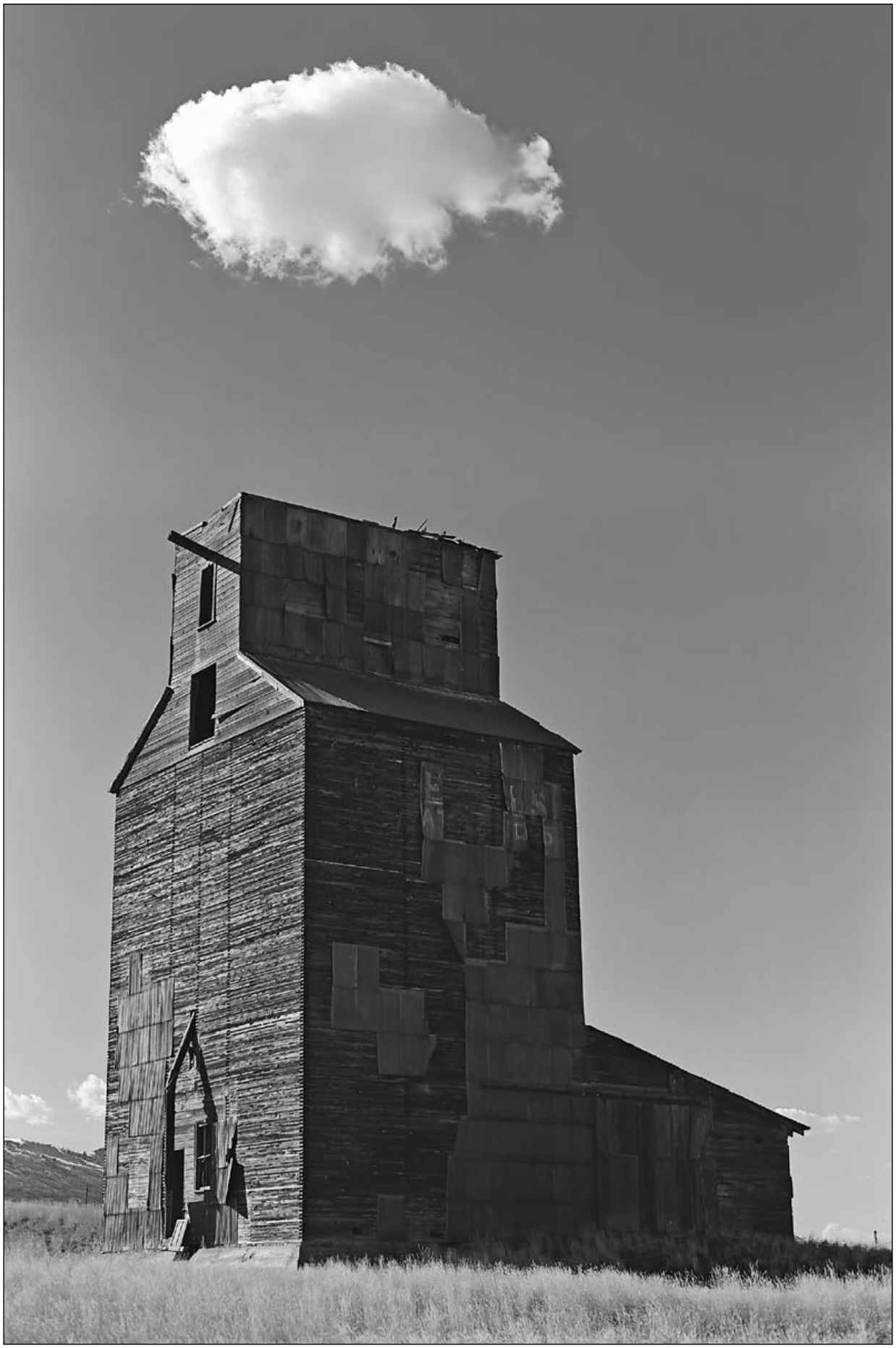
It's time to change our minds and our lives.

The revolution is here.

It's time.

If you'd like Vitek's reading list, write to Joan Olsen at 2440 E. Water Well Road, Salina, KS 67401, or olsen@landinstitute.org.

Midsummer Vermont, by Asa Cheffetz, 1936. Wood engraving, 6¼ by 4¾ inches. From the Birger Sandzen Memorial Gallery, Bethany College, Lindsborg, Kansas.



Grain elevator near Oxford, Idaho. Scott Bontz photo.

How to Be Hopeful

Barbara Kingsolver

The 2008 commencement address at Duke University. Kingsolver will speak at The Land Institute's Prairie Festival, to be held September 26-28.

The very least you can do in your life is to figure out what you hope for. The most you can do is live inside that hope, running down its hallways, touching the walls on both sides.

Let me begin that way: with an invocation of your own best hopes, thrown like a handful of rice over this celebration. Congratulations, graduates. Congratulations, parents, on the best Mother's Day gift ever. Better than all those burnt-toast breakfasts: these, your children grown tall and competent, educated to within an inch of their lives.

What can I say to people who know almost everything? There was a time when I surely knew, because I'd just graduated from college myself, after writing down the sum of all human knowledge on exams and research papers. But that great pedagogical swilling-out must have depleted my reserves, because decades have passed and now I can't believe how much I don't know. Looking back, I can discern a kind of gaseous exchange in which I exuded cleverness and gradually absorbed better judgment. Wisdom is like frequent-flier miles and scar tissue: If it does accumulate, that happens by accident while you're trying to do something else. And wisdom is what people will start wanting from you, after your last exam. I know it's true for writers—when people love a book, whatever they say about it, what they really mean is: It was *wise*. It helped explain their pickle. My favorites are the canny old codgers: Neruda, Garcia Marquez, Doris Lessing. Honestly, it is harrowing for me to try to teach 20-year-old students, who earnestly want to improve their writing. The best I can think to tell them is: Quit smoking, and observe posted speed limits. This will improve your odds of getting old enough to be wise.

If I stopped there, you might have heard my best offer. But I am charged with postponing your diploma for about 15 more minutes, so I'll proceed, with a caveat. The wisdom of each generation is necessarily new. This tends to dawn on us in revelatory moments, brought to us by our children. For example: My younger daughter is 11. Every morning, she and I walk down the lane from our farm to the place where she meets the school bus. It's the best part of my day. We have great conversations. But a few weeks ago as we stood waiting in the dawn's early light, Lily was quietly looking me over, and finally said, "Mom, just so you know, the only reason I'm letting you wear that outfit is because of your age." The *alleged outfit* will not be described here; whatever you're imagining will perfectly suffice. (Especially if you're picturing "Project Runway" meets "Working with Livestock.") Now, I believe parents should uphold respect for adult authority, so I did what I had to do. I hid behind the barn when the bus came.

And then I walked back up the lane in my fly regalia, contemplating this new equation: "Because of your age." It's OK now to deck out and turn up as the village idiot. Hooray! I am old enough. How does this happen? Over a certain age, do you become invisible? There is considerable evidence for this in movies and television. But mainly, I think, you're not expected to know the rules. Everyone knows you're operating on software that hasn't been updated for a good while.

The world shifts under our feet. The rules change. Not the Bill of Rights, or the rules of tenting, but the big unspoken truths of a generation. Exhaled by culture, taken in like oxygen, we hold these truths to be self-evident: You get what you pay for. Success is everything. Work is what you do for money, and that's what counts. How could it be otherwise? And the converse of that last rule, of course, is that if you're not paid to do a thing, it can't be important. If a child writes a poem and proudly reads it, adults may wink and ask, "Think there's a lot of money in that?" You may also hear this when you declare a major in English. Being a good neighbor, raising children: The road to success is not paved with the likes of these. Some workplaces actually quantify your likelihood of being distracted by family or volunteerism. It's called your Coefficient of Drag. The ideal number is zero. This is the Rule of Perfect Efficiency.

Now, the rule of "Success" has traditionally meant having boatloads of money. But we are not really supposed to put it in a boat. A house would be the customary thing. Ideally it should be large, with a lot of bathrooms and so forth, but no more than four people. If two friends come over during approved visiting hours, the two children have to leave. The bathroom-to-resident ratio should at all times remain greater than one. I'm not making this up, I'm just observing, it's more or less my profession. As Yogi Berra told us, you can observe a lot just by watching. I see our dream-houses standing alone, the idealized life taking place in a kind of bubble. So you need another bubble, with rubber tires, to convey yourself to places you must visit, such as an office. If you're successful, it will be a large, empty-ish office you don't have to share. If you need anything, you can get it delivered. Play your cards right and you may never have to come face to face with another person. This is the Rule of Escalating Isolation.

And so we find ourselves in the chapter of history I would entitle Isolation and Efficiency, and How They Came

Around to Bite Us in the Backside. Because it's looking that way. We're a world at war, ravaged by disagreements, a bizarrely globalized people in which the extravagant excesses of one culture wash up as famine or flood on the shores of another. Even the architecture of our planet is collapsing under the weight of our efficient productivity. Our climate, our oceans, migratory paths, things we believed were independent of human affairs. Twenty years ago, climate scientists first told Congress that unlimited carbon emissions were building toward a disastrous instability. Congress said, we need to think about that. About 10 years later, nations of the world wrote the Kyoto Protocol, a set of legally binding controls on our carbon emissions. The United States said, we still need to think about it. Now we can watch as glaciers disappear, the lights of biodiversity go out, the oceans reverse their ancient orders. A few degrees looked so small on the thermometer. We are so good at measuring things and declaring them under control. How could our weather turn murderous, pummel our coasts and push new diseases like dengue fever onto our doorsteps? It's an emergency on a scale we've never known. We've responded by following the rules we know: Efficiency, Isolation. We can't slow down our productivity and consumption, that's unthinkable. Can't we just go home and put a really big lock on the door?

Not this time. Our paradigm has met its match. The world will save itself, don't get me wrong. The term "fossil fuels" is not a metaphor or a simile. In the geological sense, it's over. The internal combustion engine is so 20th century. Now we can either shift away from a carbon-based economy, or find another place to live. Imagine it: We raised you on a lie. Everything you plug in, turn on or drive, the out-of-season foods you eat, the music in your ears. We gave you this world and promised you could keep it running on *a fossil substance*. Dinosaur slime, and it's running out. The geologists only disagree on how much is left, and the climate scientists are now saying they're sorry but that's not even the point. We won't get time to use it all. To stabilize the floods and firestorms, we'll have to reduce our carbon emissions by 80 percent, within a decade.

Heaven help us get our minds around that. We're still stuck on a strategy of bait-and-switch: OK, we'll keep the cars but run them on ethanol made from corn! But—we use petroleum to grow the corn. Even if you like the idea of robbing the food bank to fill up the tank, there is a math problem: It takes nearly a gallon of fossil fuel to render an equivalent gallon of corn gas. By some accounts, it takes more. Think of the Jules Verne novel in which the hero is racing Around the World in 80 Days, and finds himself stranded in the mid-Atlantic on a steamship that's run out of coal. It's day 79. So Phileas Fogg convinces the Captain to pull up the decks and throw them into the boiler. "On the next day the masts, rafts and spars were burned. The crew worked lustily, keeping up the fires. There was a perfect rage for demolition." The Captain remarked, "Fogg, you've got something of the Yankee about you." Oh, novelists. They always manage to have the last word, even when they are dead.

How can we get from here to there, without burning up our ship? That will be the central question of your adult life: to escape the wild rumpus of carbon-fuel dependency, in the nick of time. You'll make rules that were previously unthinkable, imposing limits on what we can use and possess. You will radically reconsider the power relationship between humans and our habitat. In the words of my esteemed colleague and friend, Wendell Berry, the new Emancipation Proclamation will not be for a specific race or species, but for life itself. Imagine it. Nations have already joined together to rein in global consumption. Faith communities have found a new point of agreement with student activists, organizing around the conviction that caring for our planet is a moral obligation. Before the last U.N. climate conference in Bali, thousands of U.S. citizens contacted the State Department to press for binding limits on carbon emissions. We're the 5 percent of humans who have made 50 percent of all the greenhouse gases up there. But our government is reluctant to address it, for one reason: It might hurt our economy.

For a lot of history, many nations said exactly the same thing about abolishing slavery. We can't grant humanity to all people, it would hurt our cotton plantations, our sugar crop, our balance of trade. Until the daughters and sons of a new wisdom declared: We don't care. You have to find another way. Enough of this shame.

Have we lost that kind of courage? Have we let economic growth become our undisputed master again? As we track the unfolding disruption of natural and global stabilities, you will be told to buy into business as usual: You need a job. Trade your future for an entry level position. Do what we did, preserve a profitable climate for manufacture and consumption, at any cost. Even at the cost of the other climate—the one that was hospitable to life as we knew it. Is anyone thinking this through? In the awful moment when someone demands at gunpoint, "Your money or your life," that's not supposed to be a hard question.

A lot of people, in fact, are rethinking the money answer. Looking behind the cash-price of everything, to see what it cost us elsewhere: to mine and manufacture, to transport, to burn, to bury. What did it harm on its way here? Could I get it closer to home? Previous generations rarely asked about the hidden costs. We put them on layaway. You don't get to do that. The bill has come due. Some European countries already are calculating the "climate cost" on consumer goods and adding it to the price. The future is here. We're examining the moralities of possession, inventing renewable technologies, recovering sustainable food systems. We're even warming up to the idea that the wealthy nations will have to help the poorer ones, for the sake of a reconstructed world. We've done it before. That was the Marshall Plan. Generosity is not out of

the question. It will grind some gears in the machine of Efficiency. But we can retool.

We can also rethink the big, lonely house as a metaphor for success. You are in a perfect position to do that. You've probably spent very little of your recent life in a freestanding unit with a bathroom-to-resident ratio of greater than one. (Maybe more like 1:200.) You've been living so close to your friends, you didn't have to ask about their problems, you had to step over them to get into the room. As you moved from dormitory to apartment to whatever (and by whatever I think I mean Central Campus) you've had such a full life, surrounded by people, in all kinds of social and physical structures, none of which belonged entirely to you. You're told that's all about to change. That growing up means leaving the herd, starting up the long escalator to isolation.

Not necessarily. As you leave here, remember what you loved most in this place. Not Orgo 2, I'm guessing, or the crazed squirrels or even the bulk cereal in the Freshman Marketplace. I mean the way you lived, in close and continuous contact. This is an ancient human social construct that once was common in this land. We called it a community. We lived among our villagers, depending on them for what we needed. If we had a problem, we did not discuss it over the phone with someone in Bubaneshwar. We went to a neighbor. We acquired food from farmers. We listened to music in groups, in churches or on front porches. We danced. We participated. Even when there was no money in it. Community is our native state. You play hardest for a hometown crowd. You become your best self. You know joy. This is not a guess, there is evidence. The scholars who study social well-being can put it on charts and graphs. In the last 30 years our material wealth has increased in this country, but our self-described happiness has steadily declined. Elsewhere, the people who consider themselves very happy are not in the very poorest nations, as you might guess, nor in the very richest. The winners are Mexico, Ireland, Puerto Rico, the kinds of places we identify with extended family, noisy villages, a lot of dancing. The happiest people are the ones with the most community.

You can take that to the bank. I'm not sure what they'll do with it down there, but you could try. You could walk out of here with an unconventionally communal sense of how your life may be. This could be your key to a new order: You don't need so much stuff to fill your life, when you have people in it. You don't need jet fuel to get food from a farmer's market. You could invent a new kind of Success that includes children's poetry, butterfly migrations, butterfly kisses, the Grand Canyon, eternity. If somebody says, "Your money or your life," you could say, Life. And mean it. You'll see things collapse in your time, the big houses, the empires of glass. The new green things that sprout up through the wreck —those will be yours.

The arc of history is longer than human vision. It bends. We abolished slavery, we granted universal suffrage. We have done hard things before. And every time it took a terrible fight between people who could not imagine changing the rules, and those who said, "We already did. We have made the world new." The hardest part will be to convince yourself of the possibilities, and hang on. If you run out of hope at the end of the day, to rise in the morning and put it on again with your shoes. Hope is the only reason you won't give in, burn what's left of the ship and go down with it. The ship of your natural life and your children's only shot. You have to love that so earnestly—you, who were born into the Age of Irony. Imagine getting caught with your Optimism hanging out. It feels so risky. Like showing up at the bus stop as the village idiot. You may be asked to stand behind the barn. You may feel you're not up to the task.

But think of this: What if someone had dared you, three years ago, to show up to some public event wearing a big, flappy dress with sleeves down to your knees. And on your head, oh, let's say, a beanie with a square board on top. And a tassel! Look at you. You are beautiful. The magic is community. The time has come for the square beanie, and you are rocked in the bosom of the people who get what you're going for. You can be as earnest and ridiculous as you need to be, if you don't attempt it in isolation. The ridiculously earnest are known to travel in groups. And they are known to change the world. Look at you. That could be you.

I'll close with a poem:

Hope: An Owner's Manual

Look, you might as well know, this thing
is going to take endless repair: rubber bands,
crazy glue, tapioca, the square of the hypotenuse.
Nineteenth century novels. Heartstrings, sunrise:
all of these are useful. Also, feathers.
To keep it humming, sometimes you have to stand
on an incline, where everything looks possible;
on the line you drew yourself. Or in
the grocery line, making faces at a toddler
secretly, over his mother's shoulder.
You might have to pop the clutch and run
past all the evidence. Past everyone who is
laughing or praying for you. Definitely you don't
want to go directly to jail, but still, here you go,
passing time, passing strange. Don't pass this up.
In the worst of times, you will have to pass it off.
Park it and fly by the seat of your pants. With nothing
in the bank, you'll still want to take the express.
Tiptoe past the dogs of the apocalypse that are sleeping
in the shade of your future. Pay at the window.
Pass your hope like a bad check.
You might still have just enough time. To make a deposit.

Congratulations, graduates.

Untitled etching by Michel Ciry, 1969. 15⅜ by 11½ inches. From the Birger Sandzen Memorial Gallery, Bethany College, Lindsborg,

The Climate in South Carolina

Dana Beach

Adapted from a talk for a conference of the Center for Humans and Nature, "Cultural, Ethical, and Civic Dimensions of Climate Change," November 27 in Charleston, South Carolina. Beach will speak at The Land Institute's Prairie Festival, to be held September 26-28.

On the subject of dichotomies, Vice President Dick Cheney made what I believe is an enlightening comment. When confronted with the proposal that conservation ought to be an integral part of U.S. energy policy, he said, "Conservation may be a sign of personal virtue, but it is not a sufficient basis for a sound, comprehensive energy policy." This point is clearly inaccurate on its face, but even more interesting to me is the distinction between personal virtue and what ought to be implemented at a national scale through federal policy.

It is not self-evident that a desirable personal virtue cannot be a sound basis for national policy. And I think that by extracting the moral and ethical dimensions of our individual lives from the debate about national policy, we have very little to go on. We're left with a cold economic framework to think about major challenges like climate change.

It seems to me that Cheney really presented one side of an important argument: whether virtue and policy should occupy separate realms, or whether virtue should inform, or serve as the foundation for, public decision making. I would argue that virtue must be at the root of public action, and that this is possible without jeopardizing individual liberty. Further, Cheney's comment raises key questions about the social context of decision making. What are the ethical and philosophical assumptions that underlie our debate about global warming and the environment, and how should they shape our agenda for reform?

I live in South Carolina. This state is like the rest of the country in many ways, but our tendency toward extremism makes it easier to observe certain social attitudes that every region must understand as we move forward on global warming.

Imagine it is 1860 and South Carolina is debating withdrawal from the Union. James Louis Petigru, who was a distinguished lawyer and a member of the state House of

Kansas.

Representatives, is in downtown Charleston arguing against secession. He spends 30 or 45 minutes making the case that the South is underfunded, has fewer factories than the North, and has fewer people. The region depends on an export economy that could easily be embargoed or besieged, he says. Petigru works through a litany of points that all suggest it would be foolish for the South, and for South Carolina in particular, to secede and precipitate war. After this rigorous assessment, Petigru concludes his speech and steps down from the podium. There is clearly little receptivity. He can tell people don't buy what he is selling. And so he walks back up to the podium and says, "South Carolina is too small for an independent republic and too large for an insane asylum."

Today we face another decision about which there is a solid, rational case for action. The science on climate change is in. And yet we are dragging our feet in South Carolina. I'm certain South Carolina is not that different from the rest of the country when it comes to looking analytically, morally or instinctually at the big decisions that climate change requires.

South Carolina is essentially a premodern, tribal society. Decision making is not analytical. Instead, it is heavily based on relationships—on personal friendships, kinships and acquaintances. So a good, solid Petigru-style argument isn't going to get very far in South Carolina. What you need is, first of all, a messenger who is credible and respected.

In the environmental movement we sometimes forget that. We've tried all the logical, fact-based arguments for why things should be done a certain way, and in a number of cases we have failed. We can't afford to fail with global warming. The stakes are too high.

So the question is then, Who are the right messengers? Based on polling and focus groups the Donnelley Foundation supported, we know that scientists and academics rank very high in credibility. But in South Carolina, with the exception of University of South Carolina professors Kirstin Dow and Greg Carbone, we aren't hearing from the scientific community about climate change.

The highest credibility rating goes to Gov. Mark Sanford—higher than conservation groups, higher than the Legislature, higher than the property rights groups, who, interestingly, rank on the bottom of the list. And Sanford has weighed in positively on addressing climate change. But in both parties of the Legislature he has many detractors.

It's not just about Sanford himself. South Carolina has spent the past 300 years attempting to diminish gubernatorial power. That is understandable when you realize that South Carolina was founded as a business enterprise by eight men, the Lord Proprietors from England, who never even visited America. Colonial South Carolinians resented being told by somebody from across the Atlantic how to live in the New World. Over the succeeding two centuries, the South Carolina General Assembly acted to weaken the power of the governor, culminating with the 1895 state constitution, which was a reaction to the imposition of federal authority during Reconstruction.

And so today South Carolina has the weakest governor in the nation. We can't get much out of the office for promoting policy reforms, except when the governor has and uses persuasive and moral power.

So we really need to find additional credible spokespeople, especially those to whom the Legislature will be more receptive.

To deal with climate change, Sanford has formed the Committee on Energy, Commerce and Climate. It consists of a lot of business people and a handful of conservationists. The committee has made surprising progress, because we have avoided the ideological debates about climate change that have stymied Georgia and other states. There, climate change has been called a farce or a fraud, continuing the resistance to reform that we've seen from business interests for 20 years. That has not happened here because Sanford and the committee's first chairman, Sen. John Courson, and its current chairman, Rep. Ben Hagood, made it clear that the purpose was not to debate the science. They insisted that we proceed on the assumption that we ought to respond to climate change—not whether, but how.

So we aren't confronting scientific and ideological smokescreens. But we do face powerful interests who want to advance their own industries by promoting alternative fuels like ethanol and wood waste, and the oxymoronic "clean coal." It's a huge and exciting arena for those who think they've got something to sell that can be burned, whether it's corn, wood chips or sweet potatoes.

We also have universities weighing in on the prospect of large grants for research. Hydrogen research has been quite popular. The University of South Carolina feels like this is the next gold rush.

Now, we know that hydrogen and corn-based ethanol and other techno-fixes are not only inadequate to deal with the climate challenge, but in some cases may be enormously counterproductive. They could actually get us into worse shape than doing nothing. But that's the political dynamic we're facing in South Carolina.

The good news is that we've got more excitement building around this issue than any I have seen from the environmental movement, as a volunteer and professional conservationist, in more than 25 years.

The rallying point is whether to build new coal-fired power plants. Santee Cooper, our publicly owned utility, proposes a large plant on the banks of the Pee Dee River near Florence. It has been gratifying to have been a part of the opposition, which includes the South Carolina Wildlife Federation, Environmental Defense, the Southern Environmental Law Center, the Sierra Club, the Southern Alliance for Clean Energy and many local groups. We've seen high collaboration not only to stop this plant, but to advance conservation and efficiency measures that could make its construction unnecessary.

Power plant fights are a defining challenge for our movement and for the earth. If the United States moves forward with 150 new coal plants and China builds one coal plant a week, there will be little we can do in this century to reduce greenhouse gases. The coal plant battle is both a symbol of the threat of climate change and a realization of the serious choices we face.

Fortunately, it is a threat that we are genetically equipped to understand—the saber-toothed tiger waiting to pounce from the rock. We need that saber-toothed tiger, the coal plant, to get us going. Just stopping coal plants is not ultimately the solution, but using that as a metaphor for our misstep in the world, and building from it a better future, is a very viable strategy.

The premise of an influential essay called *The Death of Environmentalism* is that for 30 years the movement has been based on the politics of limits—limiting pollution and other environmental effects. I do think that in the ’80s an overemphasis on federal legislation and rule making almost drove the national environmental movement to extinction. The arguments were so esoteric and so convoluted that only Beltway insiders could understand them. I recall urgent messages from the national groups urging activists to lobby for “water quality-based standards” rather than “technology-based standards.” People yawned. This was in no way the bold call for action they needed to remain involved.

Fortunately, at the same time local and state advocacy was taking off, often organized around land use debates. The land trust movement also exploded. Together, they created a new environmentalism that emerged in the ’80s and ’90s.

It was an environmentalism of place, organized around defending the landscapes people live in, using local and state laws, public funding and private land protection instruments like conservation easements. It is notable that the beginnings of the modern environmental movement, in the late 1960s and 1970s, saw passage of legislation to deal with every type of environmental problem *except* land use. In spite of great success with the National Environmental Policy Act, the Clean Water Act, the Clean Air Act, the Endangered Species Act and others, the one federal bill that failed to pass was a national land use law. I think the emergence of place-based environmentalism in the 1980s is analogous to the frenzied activity on energy we see today at the state and local levels, driven by federal paralysis and obstructionism about climate change.

So land trusts and local land use advocacy groups were invoking and deploying massive amounts of civic energy during the ’80s and ’90s while the national groups like Sierra Club and National Resources Defense Council were valiantly struggling to hold the line in Washington.

The authors of *The Death of Environmentalism* argue for a bigger agenda, one that encompasses, for example, education and health care, because if the movement doesn’t deal with health care, it can’t make common cause with the unions. They argue for environmentalism as an all-embracing agenda.

While there’s value to the discussion, the essay suffers from the same reductionism that it accuses the environmental movement of exhibiting. It reduces a complex social movement, acting at local, state, national and international levels, to a straw man.

Today, the essay has been rendered essentially irrelevant. The climate change challenge has reinvigorated environmentalism. It still does not embrace health care or education reform, as important as those issues are. But it is a focused attempt to reconceive the future in terms of energy use. And it is operating at scales ranging from neighborhoods to the United Nations. That, I think, is big enough.

While we need continually to re-examine our strategies and our underlying assumptions, we should not forget our roots as a movement and our successes. We need to acknowledge that many of our victories were driven by bad news—the fear of environmental decline and loss, and that fear will continue to be a powerful motivator of individual and collective action.

The right wing’s emphasis on family values and taxes during the past few decades brought some political successes. But many elements of the “conservative revolution” have been eroded by a loss of faith in those who led the agenda, figures such as Ralph Reed, Bill Bennett and Larry Craig. There is, I think, far more ambivalence about what it means to be a “values voter” today than four or eight years ago.

What has not been lost in the public mind is the knee-jerk opposition to new or higher taxes. That has remained a huge part of American life. It is not a comprehensive vision. It is not a “death of environmentalism” type of transformation. It is a focused, negative, fear-based appeal, and it remains powerfully resilient and politically damaging.

So as much as we may find it distasteful, it is our responsibility to be the bearers of bad news—to use fear as one motivator to move toward a larger, positive, vision-based reform. Heroic battles against insidious menaces, whether they are coal plants or soil erosion or landscape loss, must always be a part of our culture. They’re going to provide the civic energy that we need to win. Wes Jackson and his Kansas allies fighting and beating coal plant construction on the grounds of global warming is extraordinary. That one victory is a tremendous inspiration to people who need to know that we can actually succeed.

In the state of South Carolina, and every other state, we need to understand our cultural origins and make sure we’re using strategies that are consistent with those origins. We need to realize that heroic, moral and ethical expressions of personal virtue will always be important if we’re going to succeed. And I’ll end by saying that in spite of what we’ve been hearing about Greenland, I’m still an optimist.

Prairie Festival

September 26-28, 2008 at The Land Institute, Salina, Kansas

Celebrate and talk of land and country, at a place working to make farms like natural ecosystems, resilient and healthful

Barbara Kingsolver Author of novels including *Prodigal Summer* and *The Poisonwood Bible* (see her essay on page 19)

Steven L. Hopp Environmental studies teacher, co-author with Kingsolver of *Animal, Vegetable, Miracle*

Donald Worster Environmental historian, author of the upcoming *A Passion for Nature: The Life of John Muir*

Angus Wright Environmental scholar, author of *The Death of Ramon Gonzalez: The Modern Agricultural Dilemma*

Dana Beach Founder, director of the South Carolina Coastal Conservation League (see his essay on page 23)

Wes Jackson Land Institute president, author of *Becoming Native to This Place*, co-editor of *The Virtues of Ignorance*

Plus: Terry Evans photographs (sample below) ■ Barn dance, bonfire ■ Saturday supper of food grown in Kansas (mostly)

Free tent camping. For more information, including a schedule, see www.landinstitute.org or call 785-823-5376.

Jim at Fent's Prairie, 1978. Terry Evans photograph. Evans will show this and other prairie scrolls at the Prairie Festival.

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Friends of the Land ..... _____ x $12 = _____
Others ..... _____ x $16 = _____
Sunday
Friends of the Land ..... _____ x $ 6 = _____
Others ..... _____ x $ 8 = _____
Student rate, $10 for weekend,
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Attending: □ Saturday □ Sunday
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A saguaro in Pima County, Arizona, with fasciation. The growth has switched from around a point, which makes a cylinder, as in the normal plant at left, to perpendicular elongation. The cause can be mutation, pests, disease or chemical or mechanical damage. Fasciation has been seen in at least 100 species, and some can inherit the trait. It's not one that The Land Institute seeks in transforming perennials to grain crops. But it shows plants' malleability. Scott Bontz photo.

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The Writers and Artists

Dana Beach founded and is executive director of South Carolina Coastal Conservation League, which works to protect the state's coastal plain and improve coastal communities' quality of life.

Asa Cheffetz, 1897-1965, was an artist who depicted rural scenes of the Northeast.

Michel Ciry is a French artist, born in 1919.

Eileen Horn is community outreach coordinator for The Land Institute's Climate & Energy Project.

John Ciardi, 1916-86, was a poet, translator and etymologist. He wrote a book on how to read, write and teach poetry, *How Does a Poem Mean?*, had a CBS television program, *Accent*, and reported on word histories for National Public Radio's *Morning Edition.*

Denny Mills is a retired information technology supervisor for John Deere. He flies a parachute aircraft, taking photos and dropping small stuffed animals to rural children.

Blair E. Kooistra, a former newspaper photographer, chases storms, dispatches trains for BNSF Railway in Fort Worth, Texas, and co-authored *Crossroads of the West: A Photographic Look at 50 Years of Railroading in Utah*. His Web site is undertheweatherblog.blogspot.com.

Barbara Kingsolver's books include the novels *Prodigal Summer* and *The Poisonwood Bible*.

Bill Vitek is associate professor of philosophy at Clarkson University in Potsdam, New York. He has co-edited two books with Wes Jackson: *The Virtues of Ignorance: Complexity, Sustainability and the Limits of Knowledge*, released in March, and *Rooted in the Land: Essays on Community and Place.* Vitek is also a professional jazz pianist.

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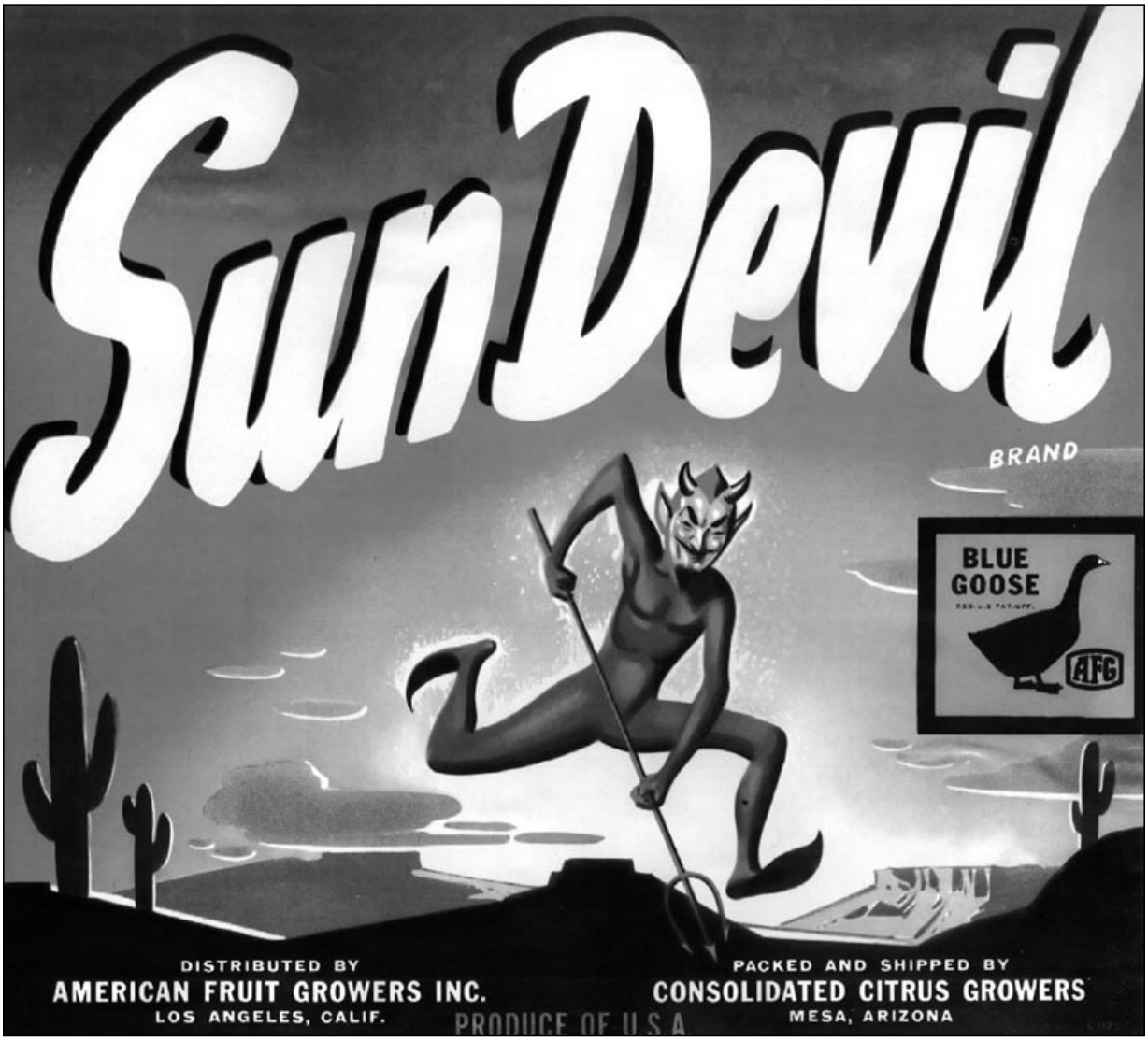

An old fruit crate label, from a time when food stayed in crates for display and growers could pitch more directly to buyers. In *The Land Report's* fall edition, Douglas Towne will give a short history of crate labels, and suggest that revival of them and roadside farm ads could reconnect farmers and concerned food buyers.

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