The Land Report

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Cover: Threshing time at The Land Institute. We harvested about 800 families of experimental perennial rye. Each bundle, containing a family of plants harvested from a 4-foot row, was threshed for seeds to use in breeding a perennial, grain-producing rye. The University of Nebraska donated to us the old thresher, which runs on a deafening engine to knock out the seed. Summer helpers did the work. Here Aaron Peck tosses a bundle of stalks on a growing pile after shoving the seed heads into the thresher. Sheila Cox, just visible behind the tarp, recorded which plot's stalks were being threshed and packed the seed in a marked envelope for each bundle. Hidden under the tarp, which was to keep off blowing chaff, Trevor Davis collected the seed in a tray under the thresher's guts. Peck grew up in Salina and is graduate student of ethics at Loyola University in Chicago. Cox is a biology student at the University of Kansas. Davis studies environmental science and political economy at The Evergreen State College in Washington.

Above: The flowers of Illinois bundleflower are collected to selectively pollinate plants and test methods for breeding the wild perennial legume into a grain crop plant. For the story, see page 8.

Our 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.

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Cultural Property and the Sense of Place

David Nickell

As part of a people forced from ancestral farming communities by the federal government, I have sought ways to preserve remnants of our culture. In our extreme case of community and cultural destruction I learned the concept of "cultural property," which might help other rural places facing what I believe is a slow-motion version of the same fate.

I was born to a place we call simply Between the Rivers. This peninsula, averaging about eight miles wide and approximately 40 miles long, stretches across the western ends of Kentucky and Tennessee, and is formed by the lower Cumberland and Tennessee rivers as they turn northward in their run to the Ohio. Revolutionary War veterans settled the place in the 1780s. The rivers made an insulating barrier, with access primarily by ferry, allowing evolution of a culture distinct from its neighbors on the opposite banks.

During 25 years the descendents of these settlers endured five major incursions of eminent domain by the federal government, including construction of Kentucky Dam and Lake on the Tennessee River, and Barkley Dam and Lake on the Cumberland. The final affront began in 1964, when the more than 900 remaining families learned that the Tennessee Valley Authority planned to take all the remaining land for a national recreation area to be called Land Between the Lakes.

Opposition was bitter. But in 1972 the courts ruled that the TVA Act of 1933 gave the agency the right to use eminent domain to "test and demonstrate" innovative methods, such as the use of artificial fertilizer in "modern" agriculture. TVA said Land Between the Lakes would demonstrate that protecting a public land from development would attract visitors to the protected area, thus stimulating development in its surroundings. With the deal done, TVA attempted to remove all signs that the 170,000 acres had ever been inhabited.

The families tried to preserve what they could. Homes, schools and churches that we could not float across the reservoirs were destroyed by TVA, with the exception of one long-abandoned church, which evidently was not perceived as a threat. A commons for fostering wildlife begun by the communities about 1908, initially with no government involvement, had been taken over by the federal government and expanded with the first round of incursions. Residents were promised that it would be protected within the boundaries of Land Between the Lakes. The cemeteries were to remain under care of the evicted families. But most sites of significance were left as rubble.

In 1995, TVA decided to cash in on this valuable real estate. Options for development of Land Between the Lakes included hotels, golf courses and a theme park portraying the rich heritage of the people who lived Between the Rivers, complete with a water slide depicting the course of the Tennessee River.

Strong public reaction forced TVA to officially withdraw its proposals. Over the winter, however, construction began on many of them, including gift shops, restaurants, stores and rental cabins. Displaced natives of Between the Rivers led opposition to this abandonment of the original mission of Land Between the Lakes and the promise used to justify eminent domain.

We stalled further developments, but the fight continues. In 1999, Land Between the Lakes was transferred to the U.S. Forest Service, from which we face serious challenges to our rights to cemeteries and other sites that we see as important to our cultural heritage. Our congressional delegation ensured that the Forest Service would continue with TVA's development plans, only without the burden of being the agency that made inconvenient commitments to us.

Soon after our fight against development began, Corky Allen, an Euchee tribal activist, suggested we investigate the laws regarding cultural properties, which they use to protect their cultural sites. These legal principles underlie the Native American Graves Protection and Repatriation Act.

Stated simply, our legal system recognizes two types of ownership. The theories of John Locke deal with fungible property that can be freely transferred as a commodity. Such transfer is total and leaves the former owner with no residual claims. If I sell you a truck, I have no say regarding your use or disposal of it. Georg Hegel offered a different theory of property, one based on the notion that production is a form of expression through which the soul of the producer is manifest in the world. In this sense the producer retains a relation to the object that can not be reduced to a commodity. If I purchase a work of art from you, it is, in the Lockean sense, my artwork. In the Hegelian sense, it remains your artwork. I do not have the right to remove your name from that artwork and affix my own to it. Even after your death, it remains your artwork in a way that it can never be anyone else's.

It is this Hegelian sense of ownership that laws regarding cultural property are designed to protect. Underlying those laws is the notion of cultural identity and a sense of membership. This concept of collective,

Laurie Brown. Housing tract,
Aliso Viejo, California, 1991.

or cultural, ownership of artifacts, places and stories that are essential to continued sense of membership in the culture is the core of the legal concept in our fight for Between the Rivers.

In *Tennessee Law Review*, Jonathan Drimmer wrote that while tangible traits such as ethnicity, language, religion and history are the markers usually identified with a cultural identity, "it is the intangible system of values, beliefs, and customs—shared among a group and transmitted to successive generations—that actually creates a 'culture'." A shared sense that their identity is linked in a shared past, present and future constitutes a cultural identity. In our case, future generations may know something of the values and beliefs that molded their heritage by experiencing the wildlife commons, now a government-held refuge, for instance, and knowing its origin stories. Being linked to others by heritage enables a sense of mutual belonging.

A community carries an accumulating memory of itself in its stories about itself. This continually emerging understanding of the community's history contains

all members within itself as long as individuals hold the culture within themselves. They are held within a common culture only if they keep a clear sense of relationship to the places and artifacts in which the folklore is rooted. To the extent that it is the place of the community stories, it is also the place of those who carry the stories.

What may be of vital significance inside the culture might make no sense from outside that culture. Drimmer said "there is no universally accepted test for determining what property constitutes 'cultural property'; indeed scholars and lawmakers frequently argue that only the culture of origin can define what constitutes its cultural property." This sense of exclusive access to the significance of such properties is precisely what provides the sense of inclusion in a community, John Moustakas wrote in *Cornell Law Review*.

Cultural property serves as the embodiment of the community's values and orientations within a specific place; it allows coherence for people by providing reference points laid out in the world before them. These references reach across generations: my ancestors did this here, and my descendents will know who they are through the coherent transmission of these meanings. The oral histories of families and communities lose their power to bond individuals in a cohesive narrative if the individuals cannot maintain the Hegelian sense of ownership of the places and the objects told of in the stories. This is what compels people dislocated from their native places to make long and difficult pilgrimages.

Loss of the stories that reveal the significance of cultural properties is even more destructive than the loss of ownership of those properties. A more subtle threat is outsiders' appropriation of those stories so the sense of ownership is lost. Access to cultural property that preserves our feeling that it is authentically "ours" preserves cultural identity, even with outside influences that would otherwise shatter our sense of membership in a place. "Denying access to such a heritage threatens to foster 'false consciousness,' a phenomenon whereby a minority group member unknowingly accepts the unfavorable stereotypes traditionally imposed on that group

by a dominant class and thereby aids in her own subordination," Drimmer said.

One can see this in communities marketed as stereotyped images of themselves for tourism. In the Appalachian region whole towns have been taken over by outside developers, who hire the locals to dress in "authentic" costumes and train them to speak a "mountain dialect" for the tourist. Appropriating a people's culture is a key to conquering them, for a people that no longer know themselves through an authentic relation to their place no longer know who they are. The conquering people do not take the culture that evolved in that place unto themselves, however. They may find the history and the folklore of the places intellectually interesting, but it can never be authentically theirs. It might be argued that this explains why conquerors have been so destructive, not just of the people, but of the places they have conquered. A corollary of this would be that people who have lost their sense of heritage become a threat to their place. In neither case is the culture that evolved in that place telling how to live there.

Legal scholars generally agree that some things are so much an expression of a group's identity that transfer is not possible. Most states have laws regarding burial sites that reflect this principle. If you purchase a farm that contains a family cemetery, the cemetery remains under the control of that family, indefinitely. I can not sign away my unborn grandchildren's claims. The Native American Graves Protection and Repatriation Act extends these protections beyond burial sites. Unfortunately, its protections for Native Americans do not yet extend to others' cultural heritages.

As the Forest Service moves forward with its plans for Land Between the Lakes, we have had to fight for our collective right to all cemeteries of Between the Rivers. We have succeeded in restoring the remaining church, including our insistence that it remain accessible to all, but never be promoted for tourism or require fees. We are having a more difficult time gaining recognition of our refuge as a culturally significant site. The same holds true for the sites of schools, homes and other churches, and for ferry landings that were in continuous use since about 1800.

All these together form the "cultural landscape" that was manifest by our interaction with that specific place since the 1780s. Access to those places, and the perpetuation of the stories that connect them, will be necessary if a sense of membership is to be passed on. There are federal laws to protect such cultural and historical landscapes, managed by each state's historic preservation officer. But they apply almost exclusively to the preservation of human structures—and the government put forth its best effort to ensure none of ours survived. As my friend Paul Yambert put it, "The law suffers from an edifice complex."

We have taken important steps in our efforts. Area natives contribute their stories, poems and photographs to a magazine, *Between the Rivers.* Community reunions are held, and attendance is increasing. But we still have many obstacles, most notably the lack of legal standing to our cultural heritage and the abandonment of the few commitments made to us when the land was taken.

I believe other rural communities could use the concept of cultural properties and the role those play in maintaining cultural heritage. If county fairs centered more on heritage activities and less on truck pulls and mud bog races, if elementary students in rural schools had local folklore workshops and field trips, if local communities pulled together to resist the rainbow promises of developers who wanted to market the remnants of their heritage, then the awareness of the shared history in those places and the sense of belonging in them would be strengthened. If local people knew their heritage, they would be more capable of valuing it; they would be less likely to give up those things that tie them to their place, and to each other.

Of course, none of this provides an easy formula for revitalizing local cultures. Some of it raises very difficult questions. For instance, what if the same objects possess conflicting meanings within the narratives of different cultures? I take as such a case the debate over the Confederate flag. While it does not resolve the issue, recognition that this object is functioning as a cultural property—albeit as a symbol of racism for one culture and as a symbol of agrarian heritage for another—might bring to the debate more light and less heat. In Between the Rivers no such blatant conflicts have emerged.

The Forest Service has begun forming the first "Heritage Resource Management Plan" to determine how such things will be addressed at Land Between the Lakes. I asked their staff archeologist if our say would carry more weight than that of a tourist who took a passing interest. He wrote back, "We do have certain obligations that we must respect in our interaction with tribal governments. However, no other organizations or groups have this kind of status with regards to actions undertaken by the federal government." He added, "Given that someone has made an effort to provide us with a comment, we will listen and respond to that comment whomever it comes from." The official position remains that we have no more say regarding our heritage than does anyone else.

We will continue to fight for these rights. I have yet to secure an attorney with the specialized knowledge needed. It may well be, however, that more important than legal challenges—and more effective in the long run—will be a better understanding of our culture, of what places, artifacts and stories can serve as cultural properties to hold the sense of being a placed people, and cultivation of the care it will take to make it happen. This, I believe, could benefit rural cultures everywhere.

Where is the Proof *About* the Pudding?

Craig Holdrege

When you buy reconstituted orange juice at the supermarket, the label tells you it is "from concentrate." For this you can thank the Food and Drug Administration, with its mandate to promote "honest and fair dealing with consumers."

Part of the idea is to ensure that foods are truthfully labeled so producers cannot deceive consumers. Labels must include information about amounts, contents, additives such as vitamins and preservatives, and processing methods ("from concentrate").

So why is your bag of corn chips containing genetically modified corn silent about this fact? Because the FDA has ruled that consumers shouldn't care about the difference between genetically engineered and traditionally bred plants—this despite the remarkable amount of novel manipulation to which GM corn has been subjected.

To produce GM corn, scientists begin by isolating genes from an assortment of viruses, bacteria and plants. They biochemically unite these genes to make a wholly novel construct. It contains at least five different genes from these different sources. The construct is multiplied and then applied as a coating to gold or tungsten dust, which is then shot into embryonic plants.

During this process the construct is often broken up into fragments, some of which are incorporated in the chromosomes of a few of the plants. (When the DNA enters the plant, "engineering" stops and the scientists can only establish after the fact what the plant has done with their intrusion.) Some of these plants may be altered as envisioned by the scientists and become the breeding stock for GM crops.

Most of the GM corn on the market today produces a protein toxin, Bt, which kills caterpillars, and also a protein that makes the plant resistant to an antibiotic (for testing). So every cell of every kernel of GM corn contains an array of novel genes and novel proteins. This makes it, in substance and in function, without a doubt different from any kernel of corn that has ever existed before on earth.

Why would we want to know that our orange juice was formulated by adding water to concentrate, but not want to know about radical processing that alters the food crop, adds antibiotic and insecticidal factors to our diet, and poses wholly unknown risks to the environment? The FDA's mandate to protect and deal honestly with consumers includes the obligation to regulate food labels "to ensure that they are truthful." But the truth, in the case of GM food, appears to have a low priority.

As one FDA scientist opined, "Consumers have a right to know—but not to know everything." This is a strange statement coming from a representative of "one of the nation's oldest and most respected consumer protection agencies," as the FDA describes itself. The FDA has gone to great lengths to "prove" that there is no difference between GM food and food from traditionally bred crops. And if there is no difference, there is no reason to label.

This is compelling logic, as long as you leave out most of the facts.

What has driven the FDA to treat GM foods so differently from orange juice? Dan Glickman, President Clinton's secretary of agriculture, gave perhaps the most succinct and up-front explanation while reflecting back on his time at the agency: "Regulators even viewed themselves as cheerleaders for biotechnology. It was viewed as science marching forward, and anyone who wasn't marching forward was a Luddite." In the name of authoritative "science-based" policy—which it is not—the government locked arms with the biotechnology industry to prevent at all costs the labeling of GM foods.

Not all countries have eliminated the transparency that a label can provide. In the European Union, consumer information is a *right*. As David Byrne, European commissioner for health and consumer protection, has stated, "Labels that cover all GM-derived products ensure that our consumers are able to choose a GM product or a non-GM product. Our consumers are demanding this. They are entitled to choice and full information."

Were the FDA taking its consumer protection mandate seriously, it would shift its commitment from the biotech industry back to informing consumers about food. And that's something we consumers should demand.

With the Prairie Writers Circle, The Land Institute invites, edits and distributes essays to newspapers. We appreciate receiving clippings of published pieces, or e-mail about them. Our address is theland@landinstitute.org. For all essays as they are released, see our web site, www.landinstitute.org.

Early Birds Get the Pollen

To breed plants, you must keep their hours.

Many plants pollinate in the early morning. This is their prime time because insect pollinators are becoming active and the air is just starting to move. Later in the day, high temperature and wind will rapidly kill the pollen of many plants. Illinois bundleflower, a productive prairie legume that The Land Institute wants to make a crop plant, is one of these early risers. So for several days in early August plant breeder Lee DeHaan and summer helper Trevor Davis, a student at The Evergreen State College in Washington, rose at 3 to 4 a.m. and made their way into dark fields.

They wanted to prevent the plants' flowers from self-pollinating. Instead, they brought and used pollen from the flowers of plants with different characteristics. Plant breeding has not been done with Illinois bundleflower, a wild perennial, but is an ability that will be needed to obtain domestic traits such as improved yield, palatability and resistance to seed pod shattering before harvest.

To cross-pollinate these plants, pollen from a flower being used as the female must be eliminated. (To read about this emasculation in wheat breeding, see Land Report No. 72.) Through early-morning observation, DeHaan learned that bundleflower flowers begin to open about 3:30, but pollen doesn't start to come from the revealed anthers until just before sunrise at 6. So there are about two hours to eliminate anthers before that day's opened flowers begin to self-pollinate.

One strategy is to gently pinch away the anthers from the flowers, which are spherical tufts about a centimeter across. The second is to dip each flower in alcohol for 10 seconds and then rinse it with water. Both methods have been used on other crops and show promise for use with bundleflower.

Before dawn and the shedding of pollen, Lee DeHaan pulls the anthers from the flowers of Illinois bundleflower.

Then, flowers that have begun to pollinate are taken whole from other plants and twirled between thumb and forefinger so the anthers brush the emasculated flowers' stigmas.

To know if a resulting plant is the offspring of two parent plants or one that self-pollinated, plants selected as mothers had a recessive genetic trait for sprawling across the ground. The pollen came from plants that stand up, bushlike, a dominant trait. Any offspring that grow prostrate like the mother will have resulted from self-pollination, unintentional on our part. Any erect plant will show DeHaan found a successful method for crossing Illinois bundleflower.

Offspring of the field work this summer will grow in the greenhouse next spring. By next summer, The Land Institute will probably be making the first controlled crosses to start down the road toward higher-yielding domestic bundleflower.

Above: Trevor Davis prepares to brush the pollen-bearing flower removed from one plant, left, against the emasculated flower of another.

Top: After applying pollen from a particular plant a little before dawn, Davis ties a bag around a flower to prevent its fertilization by any others.

Graduates' Study of Natural Systems Agriculture

A Land Institute program begun in 1998 awards up to $6,000 per year to graduate students for research bringing Natural Systems Agriculture to fruition. There are 13 fellows for 2002-03, five of them renewals. Here are the new fellows and abstracts of their work.

Jason A. Fischbach
University of Minnesota

The compatibility and regrowth characteristics of Illinois bundleflower in monoculture and mixture with warm-season grasses native to the upper Midwest.

Illinois bundleflower, a native, warm-season legume, has outstanding potential for perennial agricultural, with yields approaching those of small grains and alfalfa. Research has focused primarily on seed yield, establishment techniques and compatibility in mixtures grown in the central and southern Plains states. Little is known about its possibilities in the upper Midwest.

The use of a native warm-season pasture for dairy farming could limit the corn and soybean acreage in the upper Midwest. Use of bundleflower would decrease nitrogen fertilization requirements while increasing the forage quality.

Experiments began in the spring of 2002 at two Minnesota locations to evaluate the compatibility, persistence and productivity of bundleflower when grown in mixtures with native warm-season grasses. To be evaluated are the effect of cutting height and growth stage on biomass production, forage quality and morphological patterns of regrowth.

E. Tobyn Kiers
University of California at Davis

Mutualism stability: Toward understanding the effect of breeding on symbiotic functioning.

The importance of fungi and nitrogen-fixing bacteria among plant roots in agricultural ecosystems is increasingly acknowledged. However, these symbiotic strains vary from parasitic to mutualistic. Recent studies suggest that a host plant's ability to form effective symbiosis is a heritable trait. Understanding how breeding has affected this trait is of interest to agronomists and ecologists alike. Six traditional and modern varieties of soybeans will be inoculated with ineffective or effective nitrogen-fixing bacteria. Cultivars will be evaluated for their ability to reduce carbohydrate losses to ineffective bacteria. By aiming to develop cultivars that selectively engage in symbiosis with only highly effective microbial strains, we may maximize the benefit of the relationship, leading to an eventual decrease in our dependence on applied fertilizer.

Kendra McLauchlan
University of Minnesota

The consequences of conversion from conventional agriculture to perennial grassland for soil carbon and nitrogen dynamics.

Soil organic matter decreased dramatically after native grasslands in the United States were plowed. Little is known about organic matter dynamics following the conversion of farmland back to perennial grassland.

Working at sites converted from agriculture to grassland over the past 35 years in western Minnesota, I will measure the rate, magnitude and pattern of carbon and nitrogen changes with cessation of cultivation, and determine the effect of plant diversity and growth forms—cool-season grasses, warm-season grasses and legumes—on soil recovery.

Specifically, I will relate the dynamics of total soil carbon and nitrogen, soil organic matter fractions, aggregate formation and inorganic nitrogen to plant production and tissue chemistry. The increased understanding of how soil structure and fertility recover with reversion to grassland will help in evaluating the fertility and sustainability of Natural Systems Agriculture.

Fred Iutzi
Iowa State University

Identifying and overcoming competition-based tradeoffs in grass-legume intercrops.

Agricultural sustainability faces serious challenges, despite the efforts of conventional agricultural researchers. Perennial polyculture offers a long-term solution to many of these challenges. Researching short-term polycultures will further this goal, while also providing more immediate benefits.

Bicultures of small grains and forage legumes are both a practical addition to current cropping systems and a useful model system for perennial polyculture research. This research will evaluate morphological and physiological effects of competition between wheat and red clover, and between triticale and red clover. It will explore how to best use these intercrops, analyze ecological tradeoffs and produce general results applicable to more complex polycultures.

Kristin L. Mercer
University of Minnesota

The effect of crop-weed gene flow on wild sunflower.
Worldwide, the genetic permeability of agricultural systems is being discovered. The exchange of genes between crops and wild species has direct implications for a more sustainable agriculture, including disproportionate effects on organic farmers. Crop genes may increase the invasiveness of some weeds. Novel crop genes are not needed to increase invasiveness, but recently introduced crop plant traits such as herbicide and insect resistance may have a larger effect on evolutionary dynamics.
This research attempts to understand how herbicide-resistant hybrids from cultivated and weedy sunflower plants might be differentially aggressive in conventional and organic systems. We propose to do this by assessing competitive ability under various field conditions consistent with organic and conventional weed control. The result will help predict the effects of crop-weed gene flow in farmers' fields.

Juan Andrés Quincke
University of Nebraska

Changes in soil microbial community structure with Natural Systems Agriculture management practices.
Natural Systems Agriculture models farming after prairie, aiming to assemble and maintain similar accumulated ecological capital. The soil microbial community is essential to this, as some farming practices bring about substantial ecological change.
Our research will assess soil microbial diversity in never-plowed prairie vs. a 20-year-old restored prairie, in perennial crops vs. annual crops, and with no-till techniques vs. conventional tillage. Soil from plots set in 2000 are being sampled at three depths. Fatty acid methyl esters, structural constituents of microbial cells, will "fingerprint" the plots' microbial communities. Results will help us understand how NSA practices might shift microbial communities away from native prairie, potentially altering soil food webs and nutrient cycling.

Jennifer Reeve
Washington State University

Biological soil quality of alternative agricultural systems.
A long-term trial at McNab Ranch, California, began in 1996 to see if significant differences in compost, soil and wine grape quality could be found between organic and biodynamic treatments. Also, a long-term field trial comparing perennial grain, organic and direct-seeded annual grain, and Conservation Reserve Program systems began in October 2001 at the USDA Conservation Farm, Pullman, Washington. This proposal is to assess soil biological quality on the McNab viticulture plots, and to establish baseline soil biology data in the Conservation Farm study.

Tony Szumigalski
University of Manitoba

The influence of polycultures on crop production, grain quality, weed suppression and resource use.
Monoculture cropping uses resources inefficiently and suffers yield instability, high pest levels and soil erosion, and requires high inputs. Natural Systems Agriculture polyculture has many environmental, agronomic, economic and social advantages.
This research will investigate the benefits of intercropping a cereal, legume and oilseed—wheat, peas and canola—in the northern Great Plains. The feasibility of polycultures without in-crop pesticides will be studied. So will the effects of the different crop combinations on crop biomass and yields, grain quality and weed suppression.
Environmental effects and possible mechanisms of resource use will be measured by means including air and soil temperature, precipitation, soil water content and crop canopy interception of light. Soil and plant tissue nitrogen levels will also be measured to determine nitrogen use and dynamics within the soil.

Barn Dance

Jeff Walker

The garden is mostly put to rest—the fruits and vegetables are either eaten or put up for the winter, the leftover stems and vines fed to animals or turned under. All that remains are Brussels sprouts for Thanksgiving dinner, kale and next summer's garlic. Winter greens are getting in their last growth in the cold frames before the cold weather makes them dormant. The hay mow is full and silent, cats asleep on the soft piles. The harvest is over. The nights are getting colder as we wait for the first frost.

Now is the time to sweep off the threshing floor for a barn dance.

Oil lamps are lit, shedding their soft light on the dance floor and accentuating details. Neighbors and friends arrive, bearing all manner of homemade goodies—cheese, bread, brownies and cakes, cider, beer and wine. Fiddle, accordion, mandolin and guitar are tuned up. Suddenly a voice calls, "Everybody find a partner and join hands in a big circle." Soon, everyone is moving to the music, smiling at one another, celebrating the feeling of community that comes to a group of people dancing together.

The formations change during the night—circle dances, contra dances, in which couples face each other in two lines, square dances with four couples. These are interspersed with couples' dances such as the waltz, polka, schottische and Gay Gordons. Some dances are homemade; some are traditional dances from Europe or the southern Appalachians or New England; some are from Greece or Israel or the Caribbean. The common thread is people moving together, making by their cooperation a beautiful and satisfying pattern, pleasing to both dancers and observers.

We have been doing dances at home for many years, but it wasn't until we bought our farm that we could have a real, honest-to-goodness barn dance with the smell of hay, some curious animals gazing out at us over their mangers, cool breezes blowing over the threshing floor and darkness filling the wide, double doorways.

If the weather is good, we park wagons in the space in front of the front doors for people to put their offerings of food and drink upon. We set hay bales outside for folks to sit on. If the weather is threatening, we stock the feed table inside the barn with people food. If it is raining, everyone comes inside the barn and more people end up dancing.

Dancing is important in our lives for many reasons. It is a nice excuse for a party, and a nice thing to do at a party instead of—or in addition to—eating, drinking and visiting. Somehow, dancing together has come to seem more celebratory to our family. Rarely does a person leave from dinner at our house without at least one dance—our 2-year-old, Rachel, will not let them go.

Dancing together, like working together, helps a group of people feel like a community rather than a collection of individuals. Sure, people have different styles of dancing which spring from the depths of their individual creative spirit, but these styles must still conform to the beat of the music and to the movements of the other dancers for everyone to have a good time. Creativity within a structure is sometimes the most liberating.

In a society seemingly addicted to expert help and advice in almost every aspect of our lives, community dancing is one of the many ways to entertain yourself and your friends. You don't need expensive musicians, loud sound systems, obnoxious light shows or other accouterments of the entertainment "industry." David Kaynor, a dance caller in western Massachusetts, says that the music can be provided by something as simple as a comb and tissue-paper kazoo.

Sometimes, when our entire family is dancing together, leaving no one to play the music, we sing the music out loud as we go through the moves. On the other hand, if you have friends who are musicians, or if you play an instrument yourself—just about any instrument will do, from bongo drums to trombone—the bands can get elaborate. At our last barn dance the band consisted, at one time or another, of piano accordion, button accordion, uillean (Irish) bagpipes, Scottish small pipes and a mandolin, in addition to the basic fiddle and guitar. All that really matters is that the band projects a strong, regular rhythm.

The dance moves are simple and, in their variety, give dancers a chance to interact in several different ways. Calls like "circle left" or "all go into the center" accentuate the feeling of dancing together as one big group. "Allemande" and "do-si-do" allow a dancer to move with just one other person. And "top couple sashay down the center" has one couple dance while the other dancers watch, appreciate and—usually—clap.

In farming communities, dancing has traditionally been an important form of recreation and socializing. The phrase "potluck and dance tonight at the grange" brings back fond memories to many people raised in small communities. More than one farmer has told us stories we thought were apocryphal until we heard them from people we knew, of leaving after chores, dancing all night and coming home in time to milk the cows the next morning. We've even heard it said that the advan-

Brad Levy. Wedding dance at the Stony Point Barn in Douglas County, Kansas, June 1, 2002.

tage to a horse-drawn wagon was that you could sleep in the back while the horse walked home.

Many farmers we know admit to us that they, along with the rest of society, spend too much time these days in front of the television, letting the entertainment industry monopolize their time. As with other industrial services, the product is mediocre and unsatisfying, but the consumer is addicted, and this is good for the economy—of the industry, at least.

A community dance, especially in someone's barn lit by glowing oil lamps, rekindles imagination. It brings visions of a time that may not have ever existed—although the older farmers telling stories seem to think it did—but which certainly has plenty to recommend it.

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Knute Rockne's Farm Connection

Maurice Telleen

During Knute Rockne's 13 years as head football coach at Notre Dame, from 1918 through 1930, his teams won 105 of 122 games, losing 12 and tying 5. Fifteen of his players were named All-American. Three of his teams were named national champions, five went undefeated and six lost only one game each. Those are the bare-bones numbers of a remarkable career, a mere footnote to the man himself. The legacies of such men are not measured by numbers but by lives affected and new directions taken, and they are embellished by the countless stories and legends that come to surround them.

How did a prematurely bald coach—rather than player—who was neither tall nor handsome, and so careless about his personal appearance at times that writer Heywood Braun described him as looking like an unmade bed, become a national hero? Because he was a performer too, the consummate actor as well as a great teacher. He was a driven perfectionist who coached by inches. His famous Notre Dame shift was choreographed as carefully as the Ziegfield Follies, which he loved. His pre-game and halftime talks to his boys became the stuff of legends.

So what can I add to this? Plenty. What I'm about to tell you has never been told before—I stumbled onto it by accident. It is also about coincidental intersections. The guy who introduced me to that phrase said it explained just about everything. This may not even be true ... but it could be. That is why I'm calling it ...

A Fable: The Real Story Behind the Great Football Tradition at Notre Dame.

I was researching an article. That is a pretentious way of saying "looking stuff up." I was cruising along in the 1913 International Livestock Show Album, and there it was: in the car lot division for fat cattle, Notre Dame University had won a class for 2-year-olds with 15 head of grain-fed steers or heifers. They went on to be reserved overall champions in the division and also won the American Hereford Breeders Association award for 2-year-old Hereford carload.

What, in the name of heaven, was Notre Dame doing showing cattle in the most prestigious livestock show in the world at the time? Well, it turns out that the Society of the Holy Cross, which founded and operated Notre Dame, also ran a farm. A number of small church-related schools did. The Reorganized Latter-day Saints' Graceland College in Lamoni, Iowa, had a good herd of Jerseys when I was a kid. And it wasn't just colleges, but county homes, prisons, orphanages—Boys Town in Nebraska had a good herd of Holsteins—and on and on. They operated them for two reasons, at least: to grow food for the students, orphans, residents or inmates, and to give those people something productive to do. The College of the Ozarks, where *all* the students work, still operates a farm and livestock operation for those same reasons.

When the school finally, in 1896, hired a football coach, sides of beef from the Notre Dame farm were part of his compensation. So the farm and football had some connections early on. That coach, Francis Hering, taught English and studied law on the side. Since eligibility requirements were more relaxed, he also played quarterback and was team captain. A versatile fellow. Hering stayed only three years, but he set a course that was to serve Notre Dame very well. He was the first of several great architects of football to coach the school.

So now you know why Notre Dame had a farm even without a college of agriculture.

The victory with the Herefords in Chicago in early December of 1913 was a fitting climax to a banner year for the little school. A few weeks before that the football team, with Rockne as team captain, had stunned mighty Army, the toast of the East, 35-13.

From here on the coincidental intersections get unbelievably serious, so you don't have to believe it. I don't care. That is the nice thing about fables—you can take them or leave them.

The Norwegian village of Voss was a prolific producer of immigrant talent. It must have had a good gene pool. This little town would provide a governor and senator from Minnesota, a governor of North Dakota, a Wisconsin Supreme Court justice, the founder of a great *Chicago Daily News,* and the greatest football coach this country has known.

It also produced Nels Lilljegren, the herdsman at Notre Dame, who selected and fed that champion carload lot.

Young Nels and Knute came over on the same steamer in the 1890s. They were adventuresome little boys, driving their mothers nuts with worry that they might fall off the ship. The two boys became inseparable companions on the journey, best friends as only little kids can be.

The Rocknes—the "c" was added over here—settled in a Scandinavian enclave on Chicago's north side. The Lilljegrens gravitated to the south side, where Nels' father, Ole, a former farmer, found work at the Union Stock Yards. He quickly discovered that Upton Sinclair was right in his book, *The Jungle*: it was not a nice place to work. So when a cattle feeder from a place called South Bend, Indiana, offered Ole a job, he took it—and took his family back to the country.

Even before that—Chicago was such a big place—the boys had lost touch. But they never forgot each other.

In the fall of 1910, 22-year-old Notre Dame freshman Knute Rockne was out of his element. He had come to an idyllic, almost rural campus of about 400 students, from Chicago's north side and a job at the main post office, where he had gone after dropping out of high school after his junior year. He was in South Bend with little more than the clothes on his back, and without a high school diploma. But he had a quick mind, had read voraciously and easily passed the equivalency test.

How did he wind up in such a place? Well, he was mad about sports, especially track. He was a very good pole-vaulter and a better than average runner. He had figured on taking the equivalency test at the University of Illinois after he had put some money aside. But when two of his track friends invited him to go along with them to South Bend, he went. The decision startled his Lutheran parents.

Father Cavanaugh, the president, found Rockne a job as assistant to Father Niewland in the chemistry department. Niewland wound up calling him the most remarkable student he ever knew. Father Cavanaugh concurred, saying Rockne was a case of brain hunger.

When he was a senior he taught chemistry to underclassmen. He loved the theater and was not a bad actor. He choreographed student productions. Always eager to pick up a buck, he sent home for his flute and made the orchestra, because the members got a dollar for every concert. He went out for track and football. As a junior he would clear more than 12 feet in the pole vault and set the American indoor record, and as a senior he was named to Walter Camp's All-America third team in football, the smallest end so honored in some 20 years. He stood 5 feet 8 inches tall and weighed 160 pounds. But he was an all-American student from the git-go. At Notre Dame, Knute Rockne, as they say, blossomed into something special.

Nels Lilljegren, his little shipboard buddy, had also grown to young manhood. At the family farm he became well versed in soils, crops, weather and the ways and wiles of animals. He, too, learned a lot from his mentors. And after graduating from high school he heard that the college sought such a young man to be in charge of the livestock on its farm. Lilljegren applied for and got the job.

He had already been on it for about a year when Father Cavanaugh sent young Rockne out to the farm for a side of beef. It was probably a perk for the basketball coach. After years of separation, the two shipmates reunited, both now on the cusp of distinguished careers. It was as though they had never been apart, despite their disparate interests. The old friendship was rekindled and they thrived on one another's company.

In 1911, Rockne's sophomore year, Notre Dame's football team won six and tied two games. In 1912, they went undefeated, and at the end of the season Rockne was elected team captain for his senior year, 1913.

Shortly after the 1912 season, Lilljegren came to Rockne with a proposition. He said, "Rock, I've never missed coming to the games unless we were filling silo. I've been as faithful to your football obsession as a dog is to his master. And I still don't understand the game or your devotion to it. I think it is turnabout time. Father Cavanaugh has given me a few days off to go up to the big stock show in Chicago the week after Thanksgiving. You guys are through bashing your heads on the football field; why don't you go up to Chicago with me and see the kind of competition that gets my juices flowing? You could see the stockyards where my family wound up after getting off the boat and see your own family in the north end. It would be fun."

Rockne didn't think the stockyards would be fun, but his friend had a point. Lilljegren had been faithful to a fault, ever cheering, cheering for Notre Dame, and all the while Rockne had expressed no interest in the things that turned Lilljegren on. He agreed to go.

That's how these two Fighting Irish of Norwegian extraction found themselves at the Union Stock Yards in Chicago in early December of 1912. Rockne couldn't, for the life of him, see how anyone could spend so much time just looking, looking, looking at cows. They all kind of looked alike to him. And he said so. Lilljegren gently responded, "That is what football looks like to me. One big pile up of bodies after another."

But Rockne was sensitive to those around him and said, "Nels, if this means so much to you, why don't you bring a load of steers up here next year. Low-key as you are, I can tell there is a fierce competitor in those Scandinavian bones. And if you won, it wouldn't hurt Notre Dame either."

Lilljegren admitted that in his daydreams he had, indeed, thought about exhibiting at Chicago, but felt the administration would regard it as foolish. Like most Scandinavians, he hated to look foolish.

Rock said, "You give up too easily. I'll try to pull a few strings with Father Cavanaugh."

But that isn't even the most important thing that happened. The old International Livestock Show liked to nurture its ties with the ranching West. It had a cowboying demonstration in the arena one evening. Some calves were turned loose and horsemen roped them.

That's all the other spectators saw. But to Rockne, the lariat was a spiral pass. The calf, on a dead run as the lariat came down over his head, was a receiver.

Then there was bulldogging. The cowboys, some of them weighing no more than he did, tackled calves and tied their legs. It was all leverage and split second timing—not brute strength.

Rockne had never seen anything like this. It enthralled him. He wanted to see more, so they extended their stay through the next evening.

John Clay, the head of the greatest livestock commission house in the country and a member of the board of directors of the show, had emigrated from Scotland and never quite gotten over it. The event had a bagpipe band perform every evening. And as an added feature on the second night, Clay arranged for a demonstration, not of cowboy ropers, but of border collies, those tireless and matchless little herding dogs that gathered and penned the sheep off the misty moors of Clay's homeland.

The prospect didn't inspire Rockne. He said, "Let's go. I can see all the dogs I need to on the streets of South Bend." But this was Lilljegren's day, not Rockne's, and the herdsman said, "No, hang around, you will be amazed at what you see."

So Rockne hung around, and he was amazed. The canine rockets anticipated every ovine move, blocked the sheeps' escape routes, crouching and darting, intimidating them with that "look." It appealed to Rockne's sense of choreography. The dogs' speed, balance and maneuvering enthralled him.

He turned to Lilljegren and said, "It is a question of balance, leverage and speed, isn't it?" His friend said, "Yeah, they are good."

In the 1920s, Rockne would coach some of the smallest guards that ever suited up for a major university. Go figure.

That brief visit to the 1912 International would have

A sheep stomps its hoof, but a border collie named Cam works at control with the "look." This was part of the Flint Hills Stock Dog Trials held Oct. 26 near Burns, Kansas.

far-reaching consequences. It could not have come at a more timely juncture.

Flashback to 1905. Teddy Roosevelt, the "Rough Rider," was president. He had done some cowboying. He led and preached the vigorous life. But by 1905, football had gone too far. There was talk of outlawing the game. The straight-ahead, flying wedge type of play was turning the public off, or at least a large segment of it. Roosevelt forced rule changes in the game to open it up. The rule makers did so by allowing the forward pass in 1906.

The rules, in retrospect, seem ludicrous. The pass had to cross the line of scrimmage within five yards of the center line. It couldn't travel more than 20 yards. Fancy that as an official. So, to help the men in striped shirts, the field was chalked off into five-yard squares. This gave rise to the expression gridiron. Can you imagine a field chalked off into five-square-yard sections? Birds would circle, mesmerized by the geometric pattern. Some would crash, and others would get sick and vomit. So did a lot of the coaches. And can you imagine being a receiver camped in that small area? The defensive players could, and your chances of getting decked before the ball ever arrived were promising. So, for six years the forward pass lay more or less dormant.

But in 1912, the rule makers did away with the gridiron and invented pass interference. Now a receiver could catch the ball anywhere on the field, and was off limits to the defense until the ball arrived.

Roommates Rockne, an end, and Gus Dorais, Notre Dame's quarterback, took note. The ball wasn't exactly made for passing, but it wasn't impossible. Dorais, for one, could throw perfect spirals. So before the summer layoff leading up to the 1913 season, their senior year, these two asked the new coach, Jess Harper, to give them a couple of footballs to take with them to their summer jobs. They clerked, bussed tables, etc., at Cedar Point, Ohio, a resort sort of place. In their off time they conditioned themselves by running in deep sand on the beach and inventing their passing game. They experimented with various passing routes, short, medium and long. When practice opened at Notre Dame, they demonstrated to Harper, and he was pleased.

He was also smart. Some of their early games were breathers, so, though they did test patterns and work on timing, they were careful not to reveal too much. They intended to ambush Army. The Army coach sent an assistant to scout them in one game. Notre Dame threw only three passes.

On Nov. 1, 1913, they unleashed all their aerial weapons and stunned the Cadets. Dorais passed 17 times, with 14 completions and 243 yards. And the constant threat of the pass loosened the defense. Notre Dame's running game prospered against Army's much bigger line.

It was the first time the forward pass had ever been used so devastatingly, and it changed the game of football.

Public interest soared. A sport that had been predicated greatly on brute strength became one of position, balance, speed, mobility and leverage. It still paid to be strong, but you had to be more than strong.

When the Notre Dame team returned to South Bend, they did so as conquering heroes. It is said that the entire student body and town turned out to welcome them.

Hanging back in the crowd because he was shy and diffident and really didn't get worked up about this game of football was Lilljegren. But he was happy that his boys had won. And he wanted to embrace and congratulate his old friend.

When he finally shouldered his way back to Lilljegren, Rockne had tears in his eyes. He gave him a big bear hug and said, "Thanks, old buddy, you pointed the way."

Lilljegren, confused, said, "What the hell you talking about, Rock? Did you suffer a concussion or something?"

And Rockne responded, "Nels, you and those calf ropers, bulldoggers and border collies are the reason we whipped Army. They showed me the way the game of football could be played. And now we've done it. Beaten the best team of the East and we can beat anybody."

"Oh, that's okay, Knute. We had a good time in Chicago, didn't we?"

"Yes, Nels, we did, and we are going back next month and watch your car lot of steers beat all those hotshot cattle feeders from Iowa and Illinois and the big ag schools and the rich hobby owners of cattle. You do have your entries in, don't you?"

"Oh, yeah, but golly, I don't know. That's the International, you know. It doesn't get any tougher than that. Maybe we shouldn't take 'em."

"Nels, you will take them and you will beat the best cattle feeders in America, just as we beat Army. Nobody can beat Notre Dame!"

That is the story. I've never told it to anyone before. But you can find the results of the 1913 International Livestock Show in the old Breeder's Gazette of that time. I did.

Adapted from a story in The Draft Horse Journal, *Winter 2000-01.*

New Land
With the help of generous donors, we paid cash for 208 acres at auction. The land is about half terraced upland field that has been in wheat and which we plan to use for experiments on sloping ground. The balance is native prairie and woods on the bluff overlooking the Smoky Hill River and valley.

Journal Publications Online
We invite you to review a new section on our Web site. "Journal Publications" includes a bibliography of Land Institute science staff publications in refereed journals and in most cases a link to the full text.

Our Web site's information grows, and its use continues to steadily increase.

Prairie Festival 2002
Staff members generally thought the Prairie Festival held Sept. 20-22 was one our best. It highlighted two events: the publication of *Fatal Harvest* and the anniversary of Rachel Carson's *Silent Spring,* both intended to alert people to the largely hidden ecological costs of often-hidden decisions.

Fatal Harvest, subtitled *The Tragedy of Industrial Agriculture*, is a large, illustrated collection of writings. Three contributors to the book spoke at our event along with several other activists. Most were new to the Prairie Festival, and most were women. The presentations were diverse, expert and engaging.

In her one-woman play, Kaiulani Lee portrayed Carson to an attentive, appreciative audience. For more, see page 25.

Land Institute scientists presented a new feature to the festival, a rousing round robin illustration of their perennializing grain crops and learning to grow them in mixtures. Come next year to see our progress report.

The event will be Sept. 26-28. We moved the event from May to September last year and are sticking with fall. The weather is more dependably pleasant, and there is no conflict with spring planting.

Natural Systems Agriculture

Plant Breeding
Despite drought in Salina, we pushed ahead with our breeding programs for several perennial grain crops:

Hybrids of wheat and its perennial relatives survived summer in a large shade house extended from the greenhouse. The greenhouse itself would be too hot for these new kinds of plants. Summer killed annual wheat plants with which we had hoped to pollinate the hybrids. The hybrids, which are perennial but sterile, suffered little ill effect. With fall it is cool again, everything is back in the greenhouse, and with new annual wheat plants we will be able to pollinate.

The new Illinois bundleflower breeding nursery survived without irrigation. Lee DeHaan is developing cross-pollination methods for this species. (See page 8.)

We made hundreds of sorghum pollinations again this summer, crossing strongly winter-hardy plants with ones having larger and better-quality seed. We will sow large populations covering many acres next spring, to select those needles in the haystack that have the right combinations of traits.

David Van Tassel propagated our new hybrids of annual and perennial sunflowers for further crossing. He treated hundreds of wheat and sunflower hybrids with a chemical called colchicine to double their number of chromosomes and, we hope, improve their seed fertility.

After 14 years, the greenhouse roof started to come apart in hail and high wind. This summer the roofing was replaced with a rigid, hail-resistant plastic. Three of the greenhouse's four chambers now are heated. And in the fall we installed an automatic drip watering system that will save at least two hours per day—including weekend days—of hand watering. The three chambers were filled immediately with wheat, sorghum, and sunflower hybrids at various stages of growth.

Steve Hopper, left, and Greg Veasman of Hummert International prepare to put a new roof of rigid clear plastic on our greenhouse, after removing a 14-year-old flexible sheeting roof that had weathered to tattering.

Agroecology Research

A new agroecology research project was established this year in cooperation with John Reganold and Dave Huggins of Washington State University in Pullman. This long-term effort includes research plots at The Land Institute and Pullman, and will allow researchers and students to study the effects of different management systems on water and nutrient use. The systems include restored native vegetation, annual crops grown in rotation and prototypes of perennial grain cropping. Extensive soil sampling is under way to compare with future soil chemical and physical characteristics.

On land formerly the Sunshine Farm, new long-term research plots were begun this fall to study the effects of plant diversity on disease management in perennial systems. Unlike annuals, in which disease cycles can often be broken by changing the crop from year to year, perennial systems must be able to fend off disease over several years. Cindy Cox, an NSA graduate fellow working on a plant pathology doctorate at Kansas State University, is overseeing this work.

As mentioned in The Land Report summer issue, we have been taking data throughout the growing season on a native prairie meadow. The meadow, used for prairie hay production by owner Jim Duggan of Niles, Kansas, has proven a valuable site for our research and education programs. In July, during our NSA graduate fellows workshop, students spent a day collecting data on soils, insects and plants. Future workshops will collect more for comparison.

Sunshine Farm Project

Two research papers were written this summer.

"Animal production and farm size in Holmes County, Ohio, and U.S. agriculture" was recently accepted for publication, probably in 2003, by the *American Journal of Alternative Agriculture*. By means in contrast with those of large-scale animal operations, small Amish farms also achieve intensive production, through large imports of feed, feeder pigs, calves and broiler chicks. The text is to be posted on our web site under "Journal Publications."

The other paper, "Energy in agriculture and society: Lessons from the Sunshine Farm Project," was presented in September at the third biennial workshop Advances in Energy Studies: Reconsidering the Importance of Energy, in Porto Venere, Italy. The proceedings will be published possibly in 2003. In terms of the industrial energy required for farm inputs such as production supplies and field equipment, the Sunshine Farm provided 50 percent of its own inputs through leguminous nitrogen fixation, animal feed, oilseeds for biodiesel fuel and electricity from a photovoltaic array.

Rural Community Studies Program Final Report

Project director Bev Worster recently made her final report to the Rural School and Community Trust, which funded a three-year, K-12 education program organized through The Land Institute.

Three school districts formed the Matfield Green Consortium for Place-based Education. We aimed to show that ecology could be a guiding principle of education, helping students to learn how people, land and communities are woven together, and how the school districts might strengthen those ties to sustain all three. We proposed that there might be no need to teach "environmentalism" when we consider each discipline through the lens of ecology. Interdisciplinary thinking takes youngsters out to follow inquiries about the prairie, the stream and the woods. It focuses on their physical, natural world, and leads to the connections of place to ecosystem to people to culture.

An important program success was an annual weeklong teacher and community workshop called Reading the Landscape of Home, sponsored by The Land Institute and Emporia State University. Led by two ESU biologists, two dozen specialists from universities, parks and government agencies made presentations. Teachers described their place-based work from previous years. They engaged in field studies, art, specimen collecting, history tours, mapping, soil analysis, photography, music, literature, writing, games and discussions. Community members led tours, shared their history, gave access to their land and sat in on classroom sessions. Themes working with tallgrass prairie, watersheds, habitats and community let teachers experience, not just hear about, an approach for their students.

These teachers will influence current students, future students and other teachers. The efficacy of new information probably is enhanced when shared by many teachers in the same school. With mutual understanding they may incorporate the ideas into the school culture, increasing the likelihood for systemic change.

The three districts have 11 rural schools, about 180 teachers and more than 2,000 students. Forty-five teachers, about 25 percent of those in the districts, participated in at least one weeklong workshop. Nineteen attended more than once.

Worster reported that 90 percent of surveyed teachers said place-based education altered their ideas about teaching. A majority said their students became more aware of or interested in natural environment and local history. A greater number than attended the weeklong workshops said their experiences altered their ideas about what to teach and how to teach it, and even more expressed strong intent to continue place-based activities and projects.

Worster's dynamic and compelling communications, and her persistence and dedication awakened the interests of disparate sets of people to the potential of ecology as a principle for place-based education. She attracted people from universities, government, communities and schools to deepen education for rural students. We hope what she sparked will benefit our rural schools indefinitely.

Thank you to our contributors, July through September 2002

Thousands of tax-deductible gifts, from a few to thousands of dollars, are received each year from individuals and private organizations to make our work possible. Our other source of revenue is earned income from interest and event fees, recently about 6 percent of total. Large and small gifts in aggregate make a difference. They also represent a constituency and support of ideas, and they help spread ideas as we work together toward greater ecological sustainability.

Thank you to you, our perennial friends.

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The Writers and Artists

Laurie Brown is a photographer in Southern California. Her book is *Recent Terrains: Terraforming the American West*.

Priti Cox was born and lived in Hyderabad, India, until 2000, when she moved to Salina with her husband, Stan Cox. Her work will be displayed at The Land Institute's Prairie Festival Sept. 26-28, 2003.

Craig Holdrege is a biologist, educator and director of The Nature Institute in Ghent, New York. He wrote *Genetics and the Manipulation of Life: The Forgotten Factor of Context.*

Brad Levy is a software engineer who has documented in photos the Lawrence, Kansas, music and dance community's events for 10 years.

David Nickell teaches sociology and philosophy at Paducah Community College and farms north of Land Between the Lakes. The articles he cites are Drimmer's 1998 "Hate Property: A Substantive Limitation for America's Cultural Property Laws," in *Tennessee Law Review* 65:691-760, and Moustakas' 1989 "Group Rights in Cultural Property: Justifying Strict Inalienability," in *Cornell Law Review* 74:1179-1231.

Maurice Telleen co-founded *The Draft Horse Journal* and is author of *A Century of Belgian Horses in America* and *The Draft Horse Primer*. He lives in Waverly, Iowa.

Jeff Walker is chairman of the geology and geography department at Vassar College in Poughkeepsie, New York. He has developed a research program on soil geology's importance for natural and agricultural ecosystems. His research is based on his 15-acre farm.

Theater in the Ground

Kaiulani Lee stood on the earth floor of a barn in Kansas, with a desk, some books and a teapot, the cool night wind swirling dust around her, and brought her audience to a cabin in Maine, into the mind and heart of *Silent Spring* author Rachel Carson. This was *A Sense of Wonder,* a play at our Prairie Festival on Sept. 21. Alone on stage through the piece's two acts, under the focus of about 200 gathered in the Land Institute barn, Lee as Carson presented the very private scientist's love of the natural world, and her battle with both cancer and the chemical companies whose results *Silent Spring* passionately and thoroughly exposed 40 years ago. Lee returned after her ovation to answer questions about the play. The actress, who has performed on Broadway and television, crafted *A Sense of Wonder* with the help of Carson's friends and colleagues, building it directly from the scientist's published writing and personal journals. She has presented the play for some 10 years. Lee was joined in answers by Maril Hazlett, a University of Kansas doctoral student in environmental history addressing concerns of pesticides and human health. Her dissertation examines the controversy that followed *Silent Spring.* Hazlett's essay on this will appear in *Fertile Ground: Knowing Nature Through Gender,* scheduled for publication by the University Press of Kansas next fall.

Kaiulani Lee, center, and environmental historian Maril Hazlett, right, answered questions after Lee's portrayal of Rachel Carson at the Prairie Festival. At lower left is Frieda, who can act only as a dog, but who had manners to take the stage only after Lee's bows.

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	Session Title	Speaker(s)
	Saturday, September 21	
S1	*Natural Systems Agriculture Round Robin*	Stan Cox, Moderator; Marty Bender, Lee DeHaan and Jerry Glover
S2	*Pharmaceutical Plants and the Threat They Represent*	Margaret Mellon
S3	*Getting Over Pesticides: What Does It Really Take?*	Monica Moore
S4	*Future Harvests: Fatal or Otherwise?*	Wes Jackson
	Sunday, September 22	
SU1	*Join the Home Team*	Kamyar Enshayan
SU2	*The Farmer as Conservationist*	Catherine Badgley
SU3	*A Conversation with Corn*	Claire Cummings

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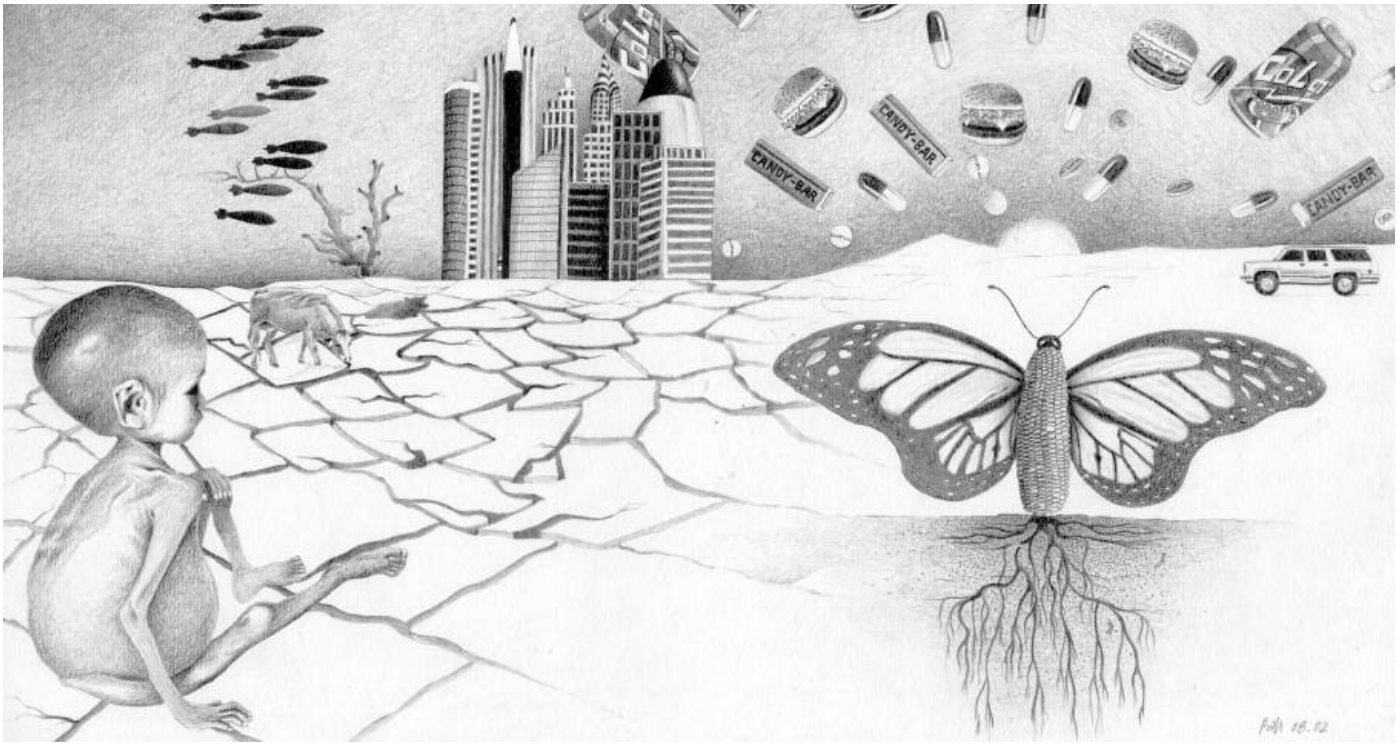

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